Service Manual

FOR THE TURBOCHEF® HIGH h CONVEYOR 1618, 2020, AND 2620 OVENS

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For further information, call

800.90TURBO

or

+1 214.379.6000

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The information contained in this manual is important for the proper installation, use, maintenance, and repair of this oven. Follow these procedures and instructions to help ensure satisfactory baking results and years of trouble-free service.

Errors – descriptive, typographic, or pictorial – are subject to correction. Specifications are subject to change without notice.

Please carefully read this manual and retain it for future reference.

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Important Safety Information – Please Read First

Improper installation, adjustment, alteration, service, or maintenance of this equipment can cause property damage, injury, or death. Thoroughly read the installation, operating, and maintenance instructions before installing or servicing this equipment. Strictly adhere to the following safety information to reduce the risk of:

- Damage to the oven
- Damage to property near the oven
- Personal injury
- Burns
- Fire
- Electric shock

General Safety Information

- Use this appliance only for its intended uses as described in this manual.
- Only qualified service personnel should service this appliance. Contact the nearest authorized service facility for examination, repair, or adjustment.
- Always ensure the oven is disconnected from the power supply before servicing, repairing, or adjusting any components or parts.
- DO NOT place the cord near heated surfaces.
- DO NOT store or use flammable vapors or liquids (e.g., gasoline) in the vicinity of this appliance.
- DO NOT allow children to use this appliance.
- DO NOT place corrosive chemicals or vapors in this appliance. It is not designed for industrial or laboratory use.
- DO NOT operate this appliance if it:
  - Has a damaged cord or plug
  - Is not working properly
  - Has been damaged or dropped
- DO NOT cover or block any openings on this appliance.
- DO NOT store this appliance outdoors.
- DO NOT use this appliance near water.
- DO NOT immerse this appliance or any of its components (e.g., cord, plug, etc.) in water.
- DO NOT let the cord hang over the edge of a table or counter.

Reducing Fire Risk

If materials inside the oven ignite or if smoke is observed,

1. Turn off the oven.
2. Disconnect the power cord or shut off power at the fuse/circuit breaker panel.

- Carefully attend the oven if paper, plastic, or other combustible materials are placed inside the oven to facilitate cooking.
- DO NOT leave items in the cook cavity when the oven is not in use.
- DO NOT cook items wrapped in cling wrap or plastic film.
- DO NOT overcook food.

Preventing Oven Damage

- When servicing this appliance, do not tear insulation to get to components. Rather, find the edge of the insulation and remove the tape that holds it in place.
- Clean the oven daily.
- Clean the oven only with TurboChef Oven Cleaner.
- DO NOT clean with a water jet.
- DO NOT allow cleaning solution or water to remain in the cook cavity longer than necessary.

Grounding Instructions

⚠ WARNING: Improper grounding increases the risk of electric shock.

This appliance must be grounded. The cord is equipped with a grounding wire and plug, which in the event of an electrical short circuit, reduce the risk of electric shock by providing an escape wire for the electric current. The wire must be plugged into an outlet that is properly installed and grounded.

Consult a qualified electrician or serviceman to determine whether or not the appliance is properly grounded.

- DO NOT use an extension cord. If the power supply cord is too short, request a qualified electrician or serviceman to install an outlet near the appliance.

Power Cord Replacement

To avoid potential hazards, only the manufacturer, its service agent, or a similarly-qualified person should replace a damaged power cord.

Specifications and Installation

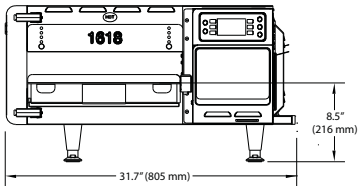


Figure 1: HhC 1618 Oven Dimensions - Side

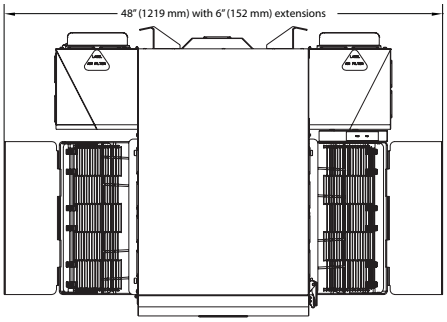


Figure 2: HhC 1618 Oven Dimensions - Top

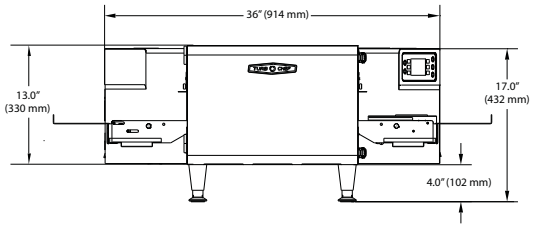


Figure 3: HhC 1618 Oven Dimensions - Front (Single)

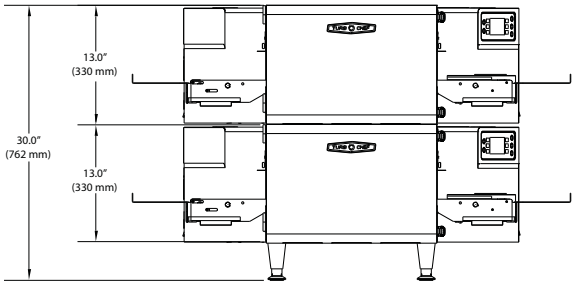


Figure 4: HhC 1618 Oven Dimensions - Front (Double)

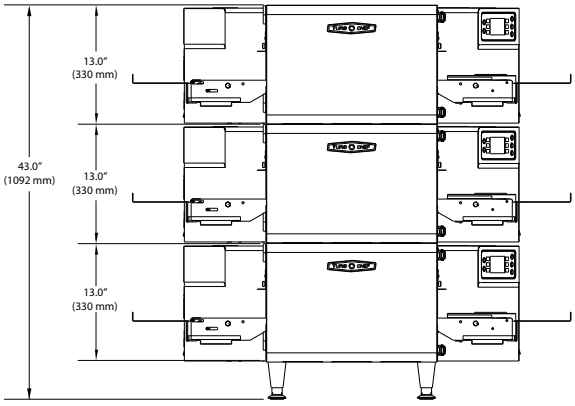


Figure 5: HhC 1618 Oven Dimensions - Front (Triple)

HhC 1618 Dimensions

Exterior

Height	13.0” (330 mm)
with legs	17.0” (432 mm)
Width	36.0” (914 mm)
Depth	31.7” (805 mm)

Conveyor

Length	36.0” (914 mm) or 48” (1219 mm)
Width	16.0” (406 mm)

HhC 1618 Electrical Specifications

North America
1 Phase
208/240 VAC
50/60 Hz
37 amp current draw
Max Input: 7.5 kW
3-wire supply
NEMA 6-50P plug
50-amp max circuit breaker protection

Europe/Asia (220-240 VAC)
3 Phase
220-240 VAC
50/60 Hz
23 amp current draw
Max Input: 7.5 kW
4-wire supply
IEC60309 4-pin plug
30-amp max circuit breaker protection

Europe/Asia (380-415 VAC)
3 Phase
380-415 VAC
50/60 Hz
12 amp current draw
Max Input: 7.5 kW
5-wire supply
IEC60309 5-pin plug
30-amp max circuit breaker protection

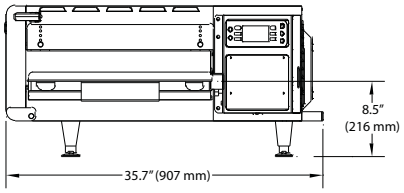


Figure 6: HhC 2020 Oven Dimensions - Side

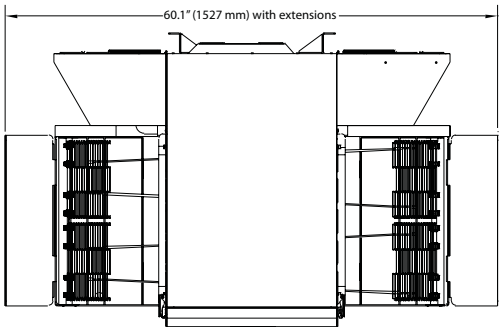


Figure 7: HhC 2020 Oven Dimensions - Top

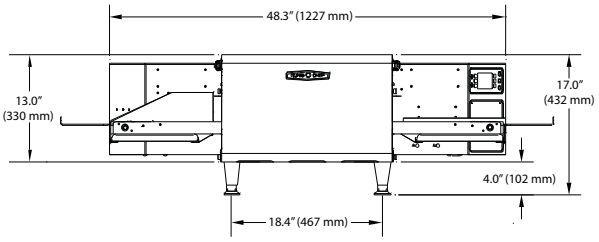


Figure 8: HhC 2020 Oven Dimensions - Front (Single)

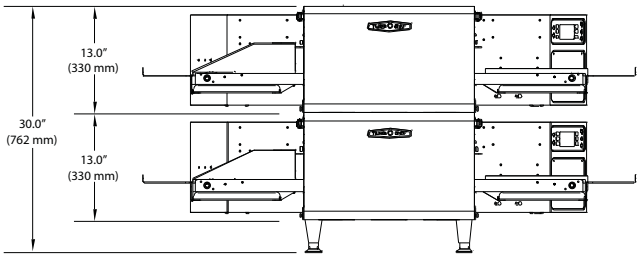


Figure 9: HhC 2020 Oven Dimensions - Front (Double)

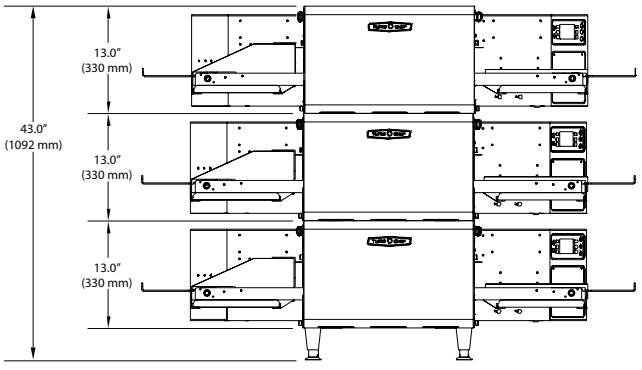


Figure 10: HhC 2020 Oven Dimensions - Front (Triple)

HhC 2020 Dimensions

Exterior

Height	13.0" (330 mm)
with legs	17.0" (432 mm)
Width	48.3" (1227 mm)
Depth	35.7" (907 mm)

Conveyor

Length	48.3" (1227 mm)
Width (Single)	20.0" (508 mm)
Width (50/50)	9.5" / 9.5" (241 mm / 241 mm)
Width (70/30)	15" / 4" (381 mm / 102 mm)

HhC 2020 Electrical Specifications

North America
3 Phase
208/240 VAC
50/60 Hz
40 amp current draw
Max Input: 14.4 kW
4-wire supply
NEMA 15-50P plug (4-pin IEC60309 available by special order)
50-amp max circuit breaker protection

Europe/Asia (220-240 VAC)
3 Phase
220-240 VAC
50/60 Hz
40 amp current draw
Max Input: 14.4 kW
4-wire supply
IEC60309 4-pin plug
64-amp max circuit breaker protection

Europe/Asia (380-415 VAC)
3 Phase
380-415 VAC
50/60 Hz
20 amp current draw
Max Input: 14.4 kW
5-wire supply
IEC60309 5-pin plug
32-amp max circuit breaker protection

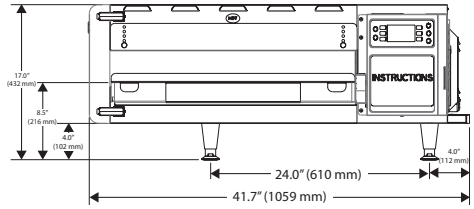


Figure 11: HhC 2620 Oven Dimensions - Side

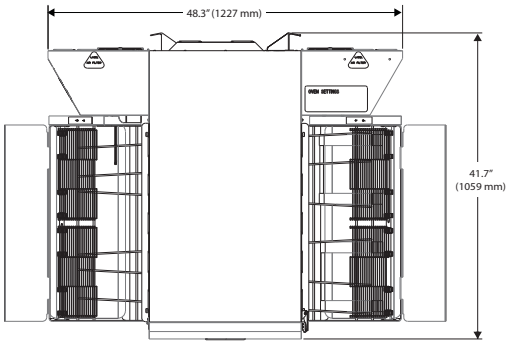


Figure 12: HhC 2620 Oven Dimensions - Top

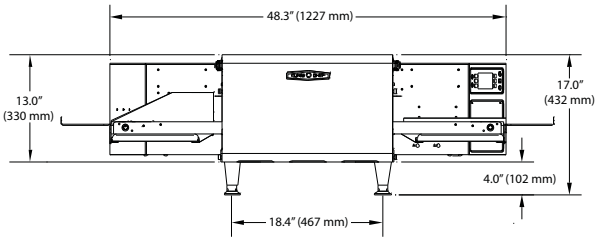


Figure 13: HhC 2620 Oven Dimensions - Front (Single)

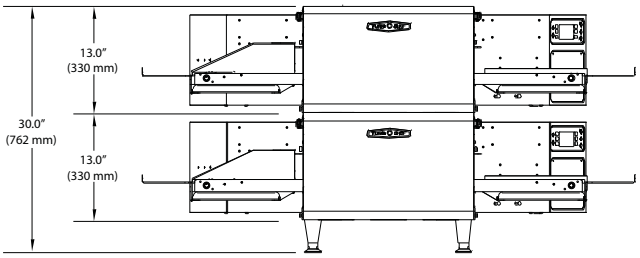


Figure 14: HhC 2620 Oven Dimensions - Front (Double)

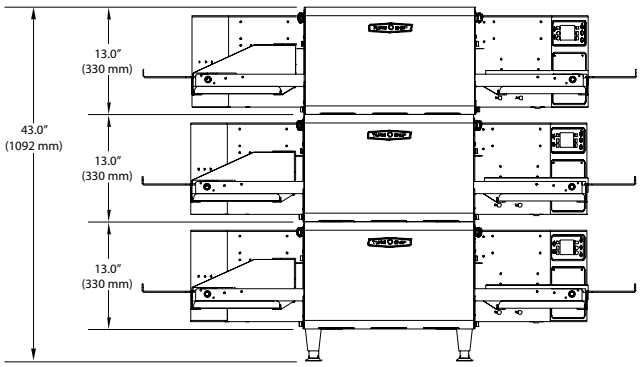


Figure 15: HhC 2620 Oven Dimensions - Front (Triple)

HhC 2620 Dimensions

Exterior

Height	13.0" (330 mm)
with legs	17.0" (432 mm)
Width	48.3" (1227 mm)
Depth	41.7" (1059 mm)

Conveyor

Length	48.3" (1227 mm)
Width (Single)	20.0" (508 mm)
Width (50/50)	12.5" / 12.5" (318 mm / 318 mm)
Width (70/30)	17" / 8" (431 mm / 203 mm)

HhC 2620 Electrical Specifications

North America
3 Phase
208/240 VAC
50/60 Hz
40 amp current draw
Max Input: 14.4 kW
4-wire supply
NEMA 15-50P plug (4-pin IEC60309 available by special order)
50-amp max circuit breaker protection

Europe/Asia (220-240 VAC)
3 Phase
220-240 VAC
50/60 Hz
40 amp current draw
Max Input: 14.4 kW
4-wire supply
IEC60309 4-pin plug
64-amp max circuit breaker protection

Europe/Asia (380-415 VAC)
3 Phase
380-415 VAC
50/60 Hz
20 amp current draw
Max Input: 14.4 kW
5-wire supply
IEC60309 5-pin plug
32-amp max circuit breaker protection

Packaging

All ovens are packaged in a double-wall corrugated box with integrated wooden skids. All international ovens shipped via Air or Less than Container Loads are packaged in wooden crates.

Certifications

Oven Construction

- 430 stainless steel front, top, sides, and back
- Cool to touch covers and panels
- Stainless steel interior
- For the HhC 2020 and HhC 2620, a 20-inch-wide cook chamber. For the HhC 1618, an 18-inch-wide cook chamber.

Installation Instructions

The oven is designed and certified for safe operation when installed in accordance with local and/or national codes. It is the owner and/or installer's responsibility to comply with any codes that may exist. Install this oven according to the policies and procedures outlined below and throughout this manual.

⚠ WARNING: Death, injury, and equipment damage can result from improper installation of a unit damaged during shipment or storage.

⚠ WARNING: Do not install an oven suspected of damage. Improper installation or the installation of a unit damaged during shipment or storage may void the Limited Warranty.

Delivery and Initial Inspection

All TurboChef ovens are shipped so as to prevent damage. Upon delivery, inspect the shipping container for external damage. Any evidence of damage should be noted on the delivery receipt which must be signed by the driver.

Upon removing the oven from its shipping carton, check for damage. Make note of any damage and contact the shipping company to file a claim. Carriers will accept claims for concealed damage if notified within fifteen days of the delivery and if the shipping container is retained for inspection.

TurboChef does not assume responsibility for any loss or damage suffered in transit. The carrier assumes full responsibility for delivery in good order when the shipment is accepted. However, when necessary, TurboChef can assist in filing a claim.

Lifting the Oven

⚠ WARNING: Two or more people are required to lift the the HhC 1618 (190 lb. ((86.2 kg)), the HhC 2020 (195 lb. (88.5 kg)), or the HhC 2620 (260 lb. (118 kg)).

Position one or more people on either side of the oven. Lift from the bottom. Never lift the oven from the front and rear. The countertop must be at least 30" (762 mm) deep and capable of supporting 195 lb. (88.4 kg) for the HhC 1618, 200 lb. (90.7 kg) for the HhC 2020, and 265 lb. (118 kg) for the HhC 2620.

Once properly positioned on the counter, plug the oven into a wall mounted electrical receptacle. See page 1 for the HhC 1618, page 2 for the HhC 2020, and page 3 for the HhC 2620.

Oven Location and Placement

⚠ WARNING: Death, injury and equipment damage may result from improper positioning.

⚠ WARNING: DO NOT stack ovens without stacking brackets. Contact Customer Service for more information.

⚠ WARNING: DO NOT stack ovens more than three high.

It is the operator's responsibility to ensure the oven is properly positioned on countertop. TurboChef will not warrant any damage or injury due to ovens that fall off countertops because of improper placement.

Proper placement of the oven will enhance long-term operator convenience and satisfactory performance. Be sure to place the oven in an area accessible for proper operation and servicing.

The surface on which the oven is placed must be at least 30" (762 mm) deep and capable of supporting 195 lb. (88.4 kg) for the HhC 1618, 200 lb. (90.7 kg) for the HhC 2020, and 265 lb. (118 kg) for the HhC 2620 (weights are per oven). The manufacturer shall not assume liability for damage or injury resulting from the improper installation of this equipment including temporary or unstable work stations or countertops.

The oven must be installed level front to back and side to side. For additional stability, the oven legs may be bolted to the countertop if desired.

Stacking the HhC 1618

Contact TurboChef for more information.

Stacking the HhC 2020 or HhC 2620

⚠ WARNING: DO NOT use this appliance without the legs installed on the bottom oven.

⚠ WARNING: Make sure all ovens are unplugged before stacking.

⚠ WARNING: DO NOT stack ovens more than 3 high.

⚠ WARNING: DO NOT attempt to lift the oven with fewer than 2 people.

NOTE: The HhC 2620 is not approved for ventless operation if triple-stacked.

NOTE: For comprehensive stacking solutions (i.e., stacking a HhC 2020 on top of a HhC 2620), see DOC-1157.

1. Remove the legs from the oven(s) that are going to be stacked on top.
2. Cover the leg holes with the abrasive pads provided with kit HCT-3001.

3a. If the front panel on each oven contains side hinges, skip to step 4.

3b. If the front panel on the ovens that are going to be stacked on top contain bottom hinges (Figure 16), ensure that a thumb screw is installed on each side to allow for front panel removal. If the oven has security screws, replace them with the thumb screws provided with kit HCT-3001.

4. Stack the top oven on the bottom oven. If stacking three ovens, stack only the middle oven at this point.
5. Remove the 6 screws marked A or B in Figure 16, below.
6. Align each straight bracket with the holes in the bottom oven and reinstall the screws marked A in Figure 17, below.
7. Align each straight bracket with the holes in the top oven and reinstall the screws marked B in Figure 18, below.
8. If stacking three ovens, repeat steps 2-7 above to stack the top oven to the middle oven.
9. On both sides of the stacked ovens, install the tabbed brackets as shown in Figure 17, removing and replacing the screws marked C.

NOTE: If double stacking ovens, 2 tabbed brackets will be used. If triple stacking ovens, 4 tabbed brackets will be used.

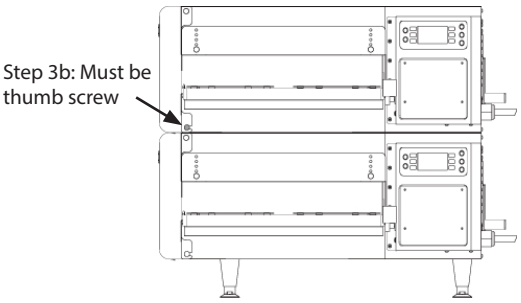


Figure 16: Bottom Hinges - Location of Thumb Screw

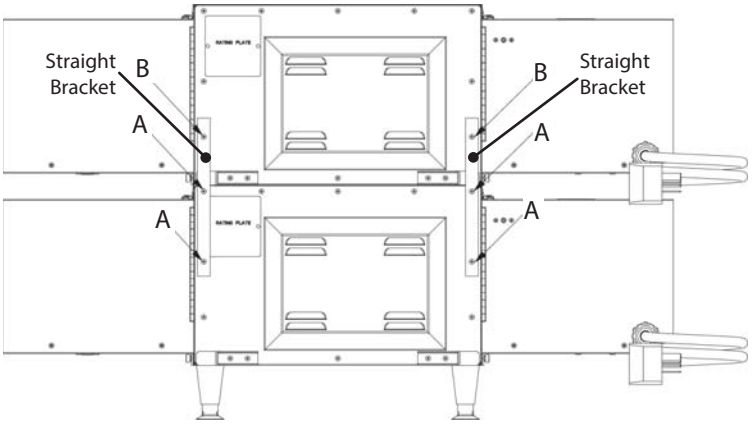


Figure 17: Installing Straight Brackets

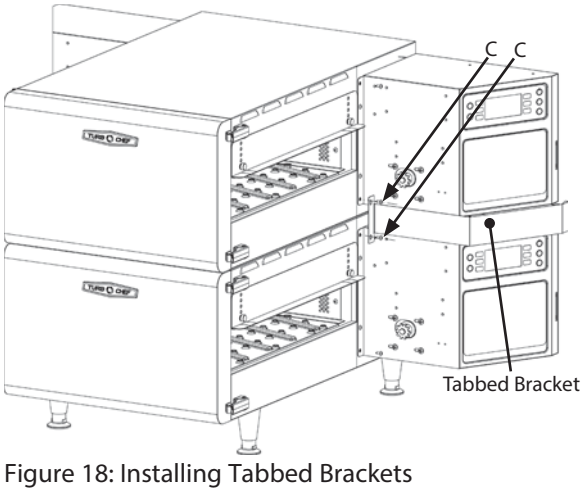


Figure 18: Installing Tabbed Brackets

Installation Near Open Heat Source

When placing a TurboChef oven near an open heat source (see Figure 19), adhere to the following:

- If the oven is being placed near a grill or stove, a divider must exist between the oven and the open heat source, with a minimum of 6" (152 mm) between the oven and the divider.
- If the oven is being placed near a fryer, a divider must exist between the oven and fryer, with a minimum of 12" (305 mm) between the oven and the divider.
- The height of the divider must be greater than or equal to the height of the oven(s) - 13" (330 mm) without legs or 17" (432 mm) with legs.
- Verify oven location has a minimum 10" (254 mm) clearance on top and minimum 2" (51 mm) of clearance on each side.

Ventilation Requirements

The HhC 1618/2020/2620 should be operated underneath a ventilation hood, except where local laws or codes allow for use without a ventilation hood, unless the oven is a UL®-certified ventless model (available upon request). For more information, contact 800.90TURBO, +1 214-379-6000, or your local distributor.

The TurboChef HhC 1618/2020/2620 oven has been approved by Underwriter's Laboratory for ventless operation (UL® KNLZ listing) for all food items except for foods classified as "fatty raw proteins." Such foods include bone-in, skin-on chicken, raw hamburger meat, raw bacon, raw sausage, steaks, etc. If cooking these types of foods, consult local HVAC codes and authorities to ensure compliance with ventilation requirements.

The HhC 1618 and HhC 2020 are approved for ventless operation while double or triple stacked. The HhC 2620 is approved for ventless operation while double stacked.

To ensure continued compliance with all health, building, and fire codes, you are required to maintain clean and sanitary conditions around your oven at all times.

NOTE: In no event shall the manufacturer assume any liability for damages or injuries resulting from installations which are not in compliance with the instructions and codes previously listed. Failure to comply with these instructions could result in the issuance of a temporary cease and desist order from the local health department until the environment concerns are addressed.

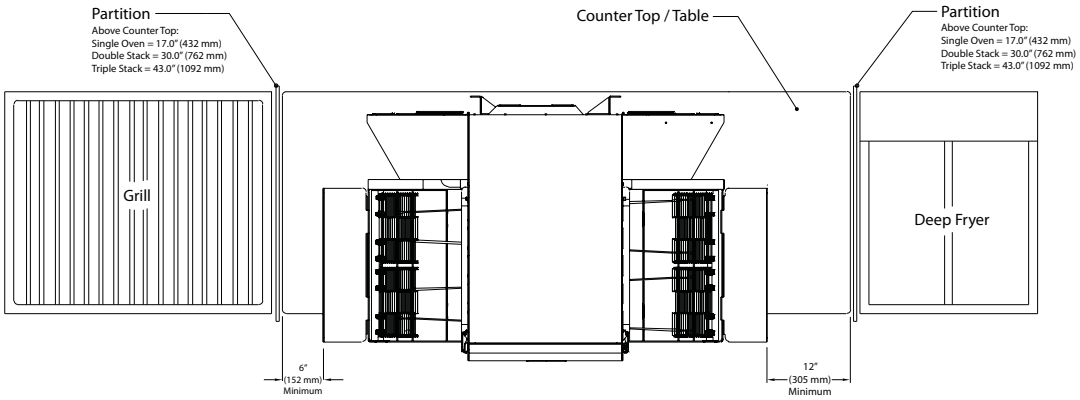


Figure 19: Installation Near Open Heat Source

Cleaning - Daily and Weekly

Daily Cleaning Instructions

= Wash, rinse, sanitize. (Use only TurboChef-approved cleaner, part number 103180).

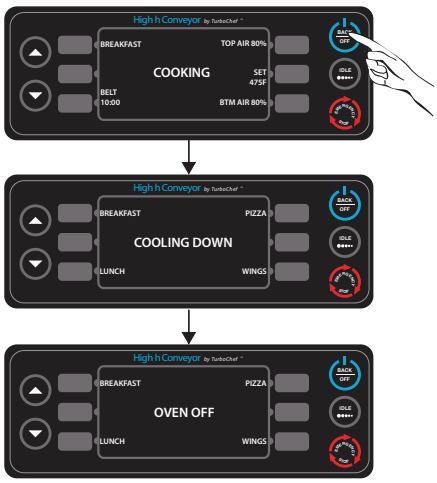
= Completely dry with clean towel.

WARNING: Always disconnect power before cleaning or servicing the oven.

WARNING: DO NOT attempt to clean the oven until it has cooled (screen reads “Oven Off”).

WARNING: DO NOT use a water jet when cleaning the oven.

1



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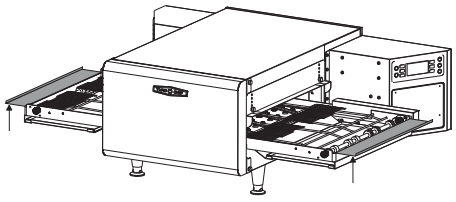

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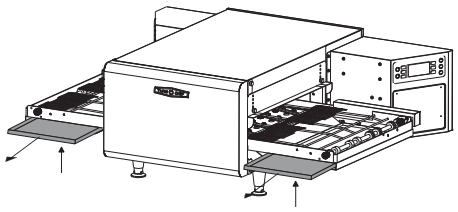

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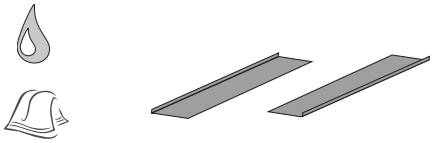

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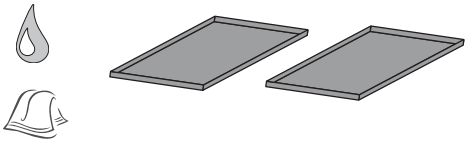

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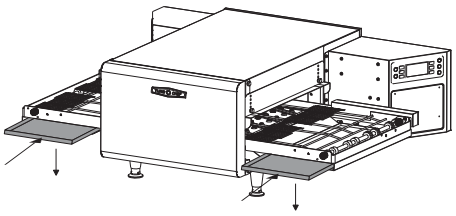

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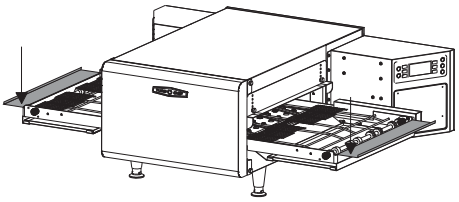

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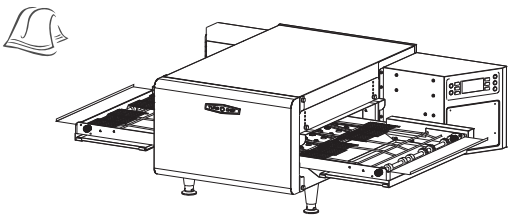


Weekly Cleaning Instructions

= Wash, rinse, sanitize. (Use only TurboChef-approved cleaner, part number 103180).

= Completely dry with clean towel.

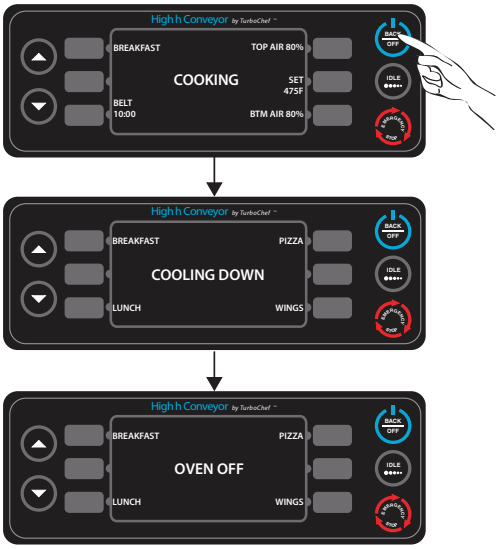
WARNING: Always disconnect power before cleaning or servicing the oven.

WARNING: DO NOT attempt to clean the oven until it has cooled (screen reads “Oven Off”).

WARNING: DO NOT use a water jet when cleaning the oven.

Step 1: Turn the Oven Off

1.



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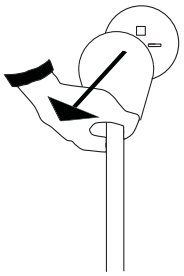

Step 2: Remove Outer Oven Components

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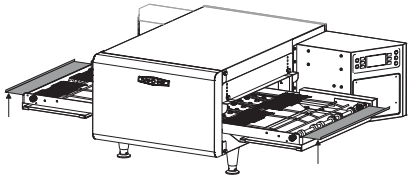

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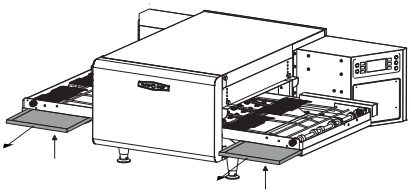

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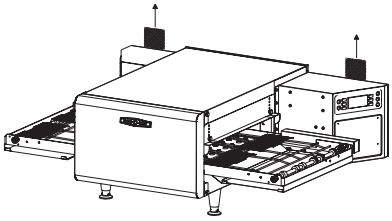

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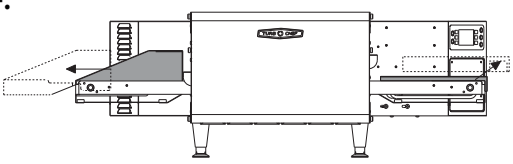

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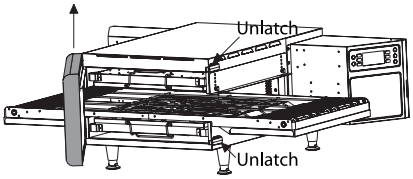
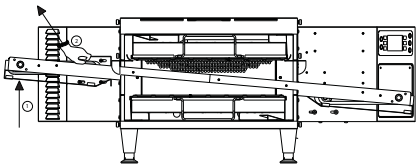


Step 3: Remove Inner Oven Components

1.



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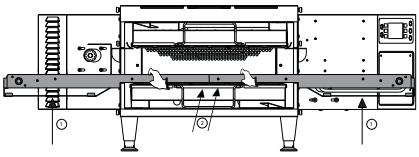

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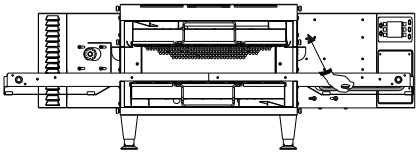

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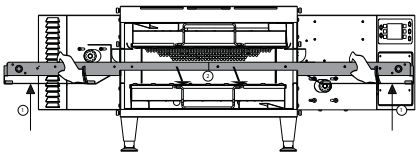

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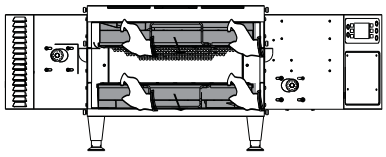
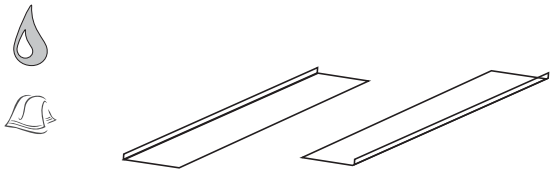


Step 4: Clean Oven Components

1.



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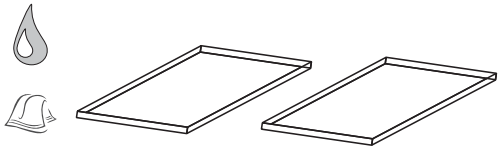

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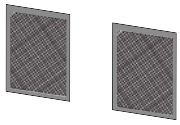
Replace filters if damaged or torn.



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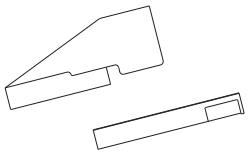

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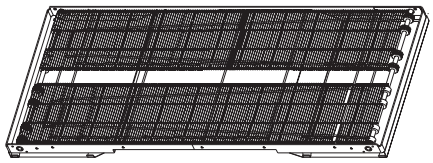

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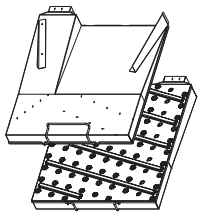

Step 5: Reinstall Oven Components

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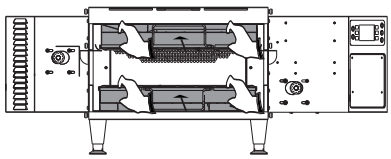

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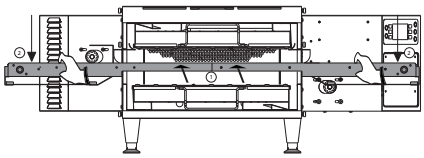

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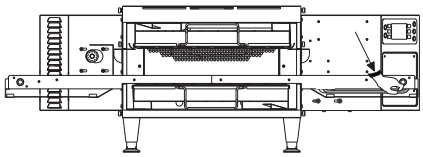

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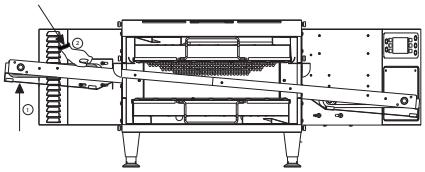

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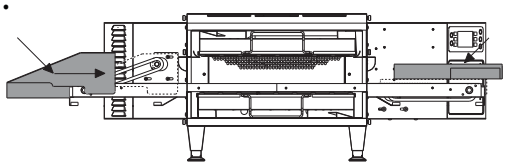

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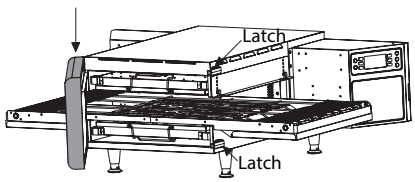

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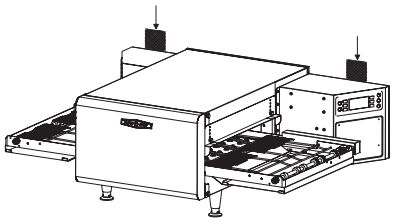

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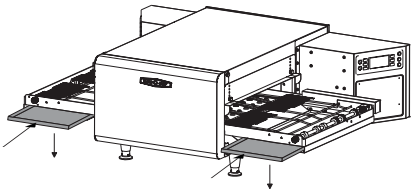

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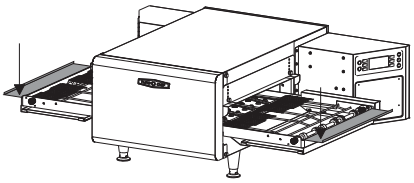
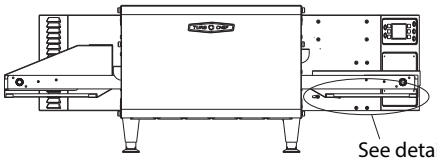
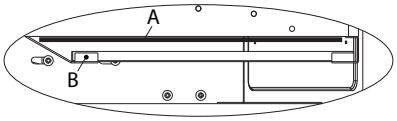


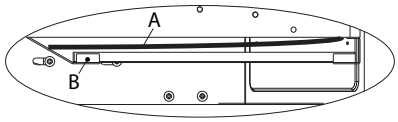
Step 6: Verify Chain Tension



See detail below.



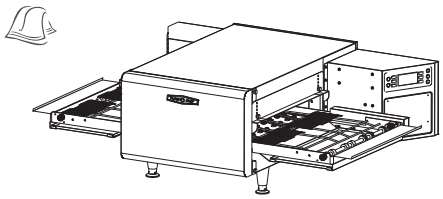
Acceptable - Chain (A) is tight and easily clears crumb tray holder (B)



Call service to have link removed - Chain (A) is loose and risks contact with crumb tray holder (B)

Step 7: Ready the Oven for Use

1.



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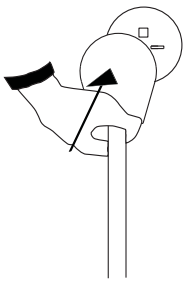

Standard Oven Operation

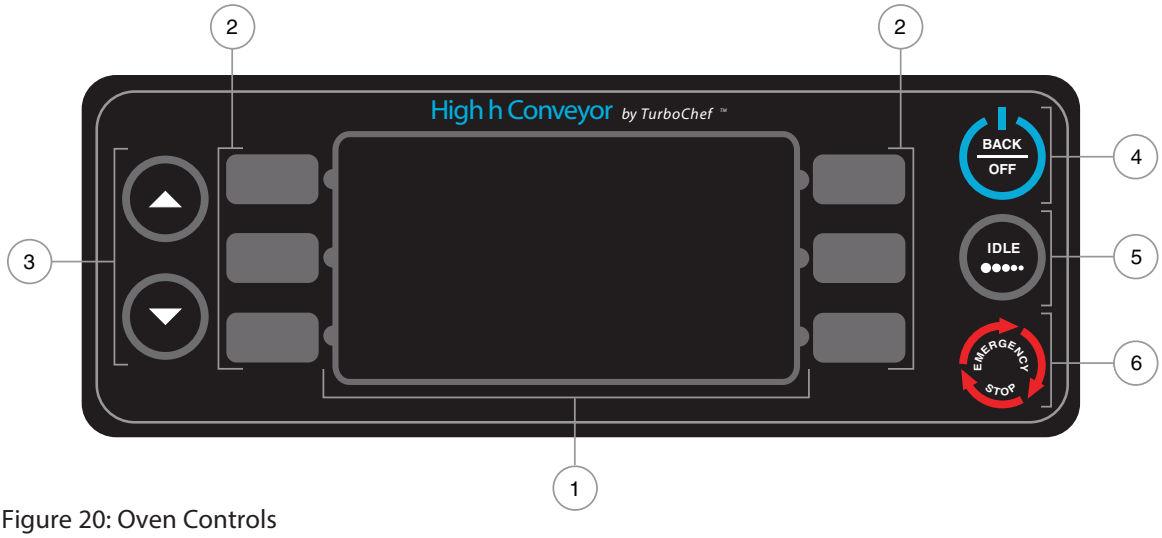

Figure 20: Oven Controls

Oven Controls

Figure 20.

1. Display

The display shows current oven operation and/or user programming information.

2. Soft Keys

Six soft keys are on the oven controls, three on the left (L1, L2, L3, where L1 = top) and three on the right (R1, R2, R3, where R1 = top). Press a soft key to select the option/command that is adjacent to it.

Soft keys are labeled in this manual for identification; however, they are not labeled on the actual oven keypad.

3. Up and Down Keys

When the oven is in the OVEN OFF MODE, use the up key to access the CONFIG MODE (page 17). Use the down key to access cooking profiles 5-8.

Also, press the up and down keys to adjust various oven settings (see pages 15-22).

4. Back/Off Key

Depending on the mode the oven is in, the back/off key will return the oven to the previous screen or turn the oven off (page 12).

5. Idle Key

The idle key activates the IDLE MODE (page 13).

6. Emergency Stop Key

The emergency stop key shuts down the conveyor and heaters and returns the oven to the OVEN OFF MODE (page 12).

NOTE: Depending on the temperature within the oven, the cooling fans will remain on to prevent damage to critical oven components.

⚠ CAUTION: DO NOT use the emergency stop key as a general on/off switch. Doing so can damage the oven and shorten its life span.

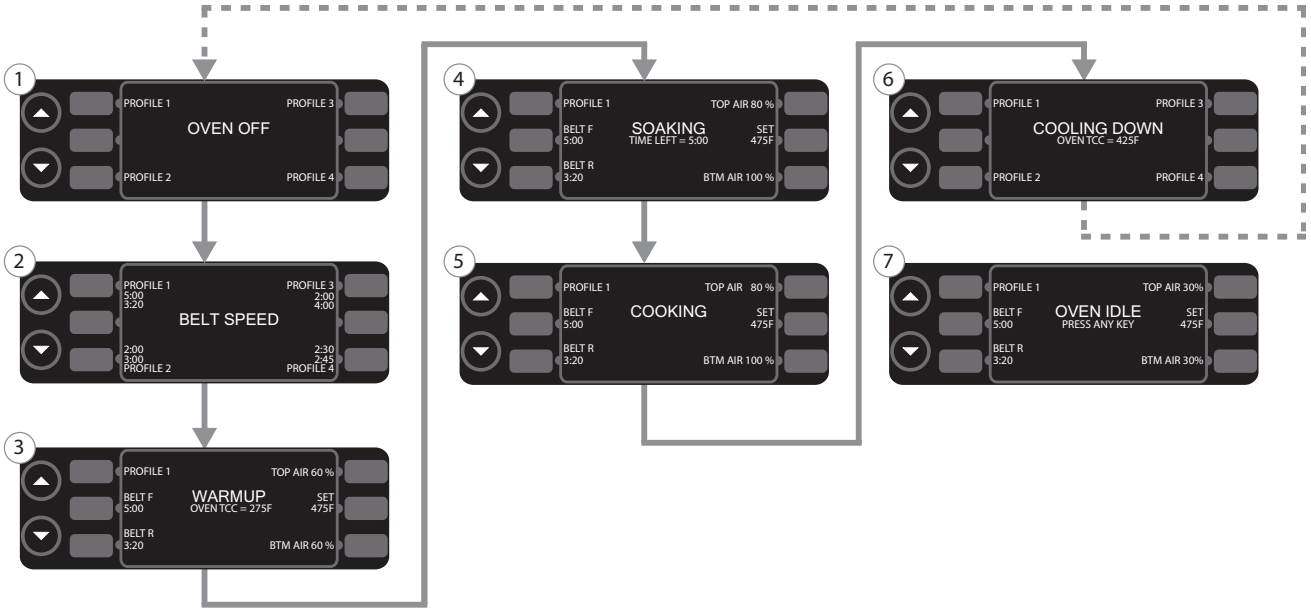

Figure 21: Cooking Modes

Cooking a Product

This section explains how to cook a food product by describing the "standard operation" modes through which the oven progresses (Figure 21).
-MODE 1: Oven Off
-MODE 2: Belt Speed Select
-MODE 3: Warming
-MODE 4: Soaking
-MODE 5: Cooking
-MODE 6: Cooling Down
-MODE 7: Idle

NOTE: MODE 7 is not part of a "standard" cooking cycle. It only occurs when the user intervenes as described on page 13.

Mode 1: Oven Off

Mode during which all cooking components are off and the oven temperature has receded below 150°F (66°C), but the display and keypad remain on. The user can access cooking profiles 1-4 on this screen (1) or press the down key to access cooking profiles 5-8.

Happens When...
-Power is supplied to the oven.
-The oven completes MODE 6.
-The user presses the down key while accessing the CONFIG MODE (refer to page 17 for more information).

Goes To...
-MODE 2 when the user selects a cooking profile (soft keys L1, L3, R1, or R3).
-CONFIG MODE when the user presses the up key.

Mode 2: Belt Speed Select

Mode during which the user selects the desired belt speed.

NOTE: If a different key is pressed, the oven will ask if you wish to continue or return to the belt speed select screen. If you select continue, the oven will not save the belt speed.

Happens When...
-The user selects a cooking profile from MODE 1 or 6.

Goes To...
-MODE 3.

Mode 3: Warming

Mode during which the oven warms to the preset cooking temperature defined by the cooking profile that was selected.

Happens When...
- A selection is made from MODE 2, and the oven's temperature at the beginning of warmup was not within (less than) 25°F (14°C) of the oven's set temperature.

Goes To...
- MODE 4 once the oven has reached the temperature defined by the selected cooking profile.
- MODE 6 when the user presses the back/off key and the oven temperature is above 150°F (66°C), or MODE 1 if the oven temperature is below 150°F (66°C).

Mode 4: Soaking

Mode during which the oven has completed warming up and automatically allows an additional five minutes for the oven cavity surfaces to warm.

Happens When...
- MODE 3 completes (within 5°F [3°C] of set point)

Goes To...
- MODE 5 when soaking completes.
- MODE 6 when the user presses the back/off key.

Mode 5: Cooking

Mode during which the oven is ready to cook. The user can place food on the conveyor to cook, or edit cook settings if the full edit or flex option is enabled. See page 14 for more information on full edit and flex options.

Happens When...
- MODE 4 completes.
- The user presses the idle key, up key, down key, or any soft key during MODE 7.

Goes To...
- MODE 6 when the user presses the back/off key.
- MODE 7 when the user presses the idle key.
- MODE 3 if the temperature drops 25°F (14°C) or more below the set point.

Mode 6: Cooling Down

Mode during which the heater shuts off to allow the oven to cool.

Happens When...
- The user presses the back/off key from MODE 3 (and the oven temperature is above 150°F [66°C]), or from MODES 4, 5, or 7.

Goes To...
- MODE 1 when the oven temperature has receded below 150°F (66°C).
- MODE 2 when the user selects a cooking profile.

Mode 7: Idle

Mode during which both blowers are reduced to 30% and the belt speed reduces to 15 minutes to save power. All other oven components remain the same.

NOTE: Press the idle key once to begin a countdown (time of the countdown is determined by the current belt speed). Press the idle key twice to immediately place the oven into IDLE MODE.

Happens When...
-The user presses the idle key from MODE 5.

Goes To...
-MODE 5 when the user presses the idle key, up key, down key, or any soft key.
-MODE 6 when the user presses the back/off key.

Editing a Cooking Profile

To edit a cooking profile, the oven must be in the COOKING MODE, and the full edit or flex option must be enabled for each option you want to edit. For more information on selecting between full edit, rigid, and flex options for each editable setting, see *Edit Modes Select Screen* on page 18.

When the rigid option is enabled for a given setting, the soft key adjacent to that setting (Figure 22) is disabled and no menu editing is allowed.

When the full edit option is enabled for a given setting, that setting is fully customizable and changes are saved once the oven returns to the OVEN OFF or COOLING DOWN MODE.

When the flex option is enabled for a given setting, that setting is customizable within flex option limitations (as described in the following sections), and changes will reset when the oven returns to the OVEN OFF or COOLING DOWN MODE. NOTE: The flex option does not apply to editing a profile name.

This section assumes that the full edit option is enabled (except where otherwise noted) and that a cooking profile and belt speed have been selected.

Changing a Cooking Profile Name

1. From the cooking screen (Figure 22), press L1 to access the name change screen (Figure 23).

2. Change the name of the cooking profile.

   - The up key moves forward through the available characters. e.g. A,B,C…

   - The down key moves backward through the available characters e.g. A,+,-, ,9,8…

   - INS (L1) inserts a space.

   - DEL (R1) deletes the selected character.

   - ---> (R2) moves the cursor to the right.

   - <--- (L2) moves the cursor to the left.

3. Press save (R3) to save the changes or cancel (L3) to cancel any changes.

Figure 22: Cooking Screen

Figure 23: Name Change Screen

Adjusting the Belt Speed

The High h Conveyor Oven can accommodate either one or two conveyor belts. The oven will automatically detect the number of conveyor belts installed and display the option to change the speed of each conveyor belt independently.

1. From Figure 22, press the soft key adjacent to the conveyor belt you wish to adjust (press L2 for the front belt [Belt F] or L3 for the rear belt [Belt R]).
2. Adjust the time it takes for the conveyor belt to completely cycle through the oven.

   - The up key increases bake time in 5-second increments up to 15 minutes.
     + Flex option enabled: the user can only increase the time up to an additional 15 seconds.

   - The down key decreases bake time in 5-second increments down to 35 seconds.
     + Flex option enabled: the user cannot decrease the time by more than 15 seconds.

3. Press the soft key adjacent to the belt that was adjusted to exit the belt speed controls.

Adjusting the Temperature

1. Press R2 (Figure 22) to access the temperature controls.
2. Adjust the temperature (range is 300-550°F [149-288°C]).

   - Press the up key to increase the temperature in 5°F/5°C increments.
     + Flex option enabled: the user can only increase the temperature up to an additional 10°F/5°C.

   - Press the down key to decrease the temperature in 5°F/°5C increments.
     + Flex option enabled: the user cannot decrease the temperature by more than 10°F/5°C.

3. Press R2 again to exit temperature controls.

Adjusting the Top and Bottom Air

1. Press R1 (Figure 22) to access the top air controls, or R3 to access the bottom air controls.

2. Adjust the air speed.

   - Press the up key to increase the air speed in 5% increments up to 100%.
     +Flex option enabled: the user can only increase the air speed by up to an additional 15%.

   - Press the down key to decrease the air speed in 5% increments down to 10%.
     +Flex option enabled: the user cannot decrease the air speed by more than 15%.

   - Press the soft key again to exit the air controls.

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Oven Modes

Config Mode

The CONFIG MODE (Figure 24) serves four main purposes:

1. To access the smart card screen.
2. To access the fault count screen.
3. To access the SETUP MODE.
4. To access the TEST MODE (service use only).

To access the CONFIG MODE, press the up key from the OVEN OFF MODE or COOLING DOWN MODE (if menus 5-8 are shown on the display, press the up key twice.

Smart Card Screen (Loading a Menu)

The smart card screen allows the user to
-Load a menu from smart card to oven.
-Save a menu from oven to smart card.

To load or save a menu,

1. Press L3 (Figure 24) to access the smart card screen (Figure 25).
2. Insert a smart card into the smart card slot (Figures 26 and 27), with the gold chip facing the front of the oven.
3. Load or save a menu.
   - Press R1 to load a menu from the smart card to the oven (Figure 25).
   - Press R2 to save a menu from the oven to the smart card (Figure 25).

Figure 24: Config Mode

Figure 25: Smart Card Screen

Accessing the Fault Count Screen

From the CONFIG MODE (Figure 24), press R1 to access the fault counts screen (Figure 28, page 18). The oven will display the number of faults that have occurred.

Accessing the Setup Mode

From the CONFIG MODE (Figure 24), press L1 to access the SETUP MODE. The SETUP MODE allows the user to customize several oven settings - see below for more details.

Setup Mode

Figure 29, page 18.

The SETUP MODE serves four main purposes:

1. To change the display temperature.
2. To change the belt direction.
3. To access the edit option screen.
4. To change the display language.
5. To access the info screen.

To access SETUP MODE, press the up key from the OVEN OFF or COOLING DOWN MODE (to access the CONFIG MODE), and then press L1.

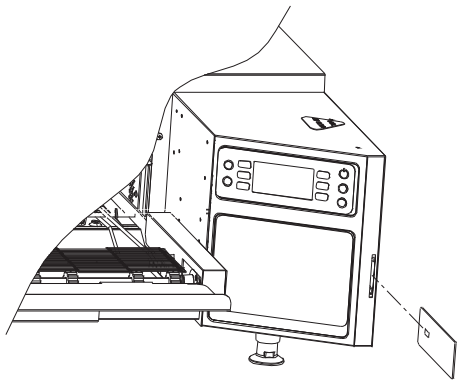


Figure 26: Loading a Smart Card

Figure 27: Insert Smart Card Screen

Changing the Display Temperature

The oven can display the temperature in either Celsius or Fahrenheit units. To change the display temperature, press L1 in SETUP MODE (Figure 29).

Changing the Belt Direction

The oven's belt(s) can travel from left to right or right to left. To change the belt direction, press L2 in SETUP MODE (Figure 29).

Edit Modes Select Screen

The edit modes select screen (Figure 31) allows the user to switch between full edit, rigid, and flex for profile name, belt speed, temperature, and % air. For more information on the different edit options, see *Editing a Cooking Profile* on page 14.

To access the edit modes select screen,

1. Press L3 (Figure 29) to access the password screen (Figure 30).
2. Input the password 6 6 3 3 by pressing the soft keys adjacent to the numbers.

To change the edit option (Figure 31),

- Press L1 to select full edit or rigid for the profile name.
- Press L3 to select full edit, rigid, or flex for the belt speed.
- Press R1 to select full edit, rigid, or flex for the profile cook temperature setting.
- Press R3 to select full edit, rigid, or flex for the % air setting.

Changing the Speaker Volume

Press R2 (Figure 29) to change the volume of the speaker. The volume can be set to either 0, 1, 2, or 3 (where 0 is mute and 3 is the loudest setting).

Info Screen

The info screen (Figure 32, page 19) is used to display the following information in an easy to access place:

- Serial number
- Electrical compartment temperature
- Incoming voltage (US only)
- Total time the oven has been on
- Total time the oven has been idle
- Software version

To access the info screen, press R3 within the SETUP MODE (Figure 29).

Updating the Firmware

From the oven off or cooling down screen:

1. Insert the gray smart card (see Figure 26, page 17) with the gold chip facing the front of the oven. If multiple smart cards are required, they will be labeled in sequence - ensure the correct sequence is followed.
2. From the COOLING DOWN or OVEN OFF MODE, press and hold the idle key until the oven resets (approximately 5 seconds). The display will go blank until the upload is complete.
3. When the oven beeps one long high tone, the load was successful. If a second card was provided, insert it.
4. When the oven restarts and the display turns on, the update is complete. Remove the smart card from the oven.

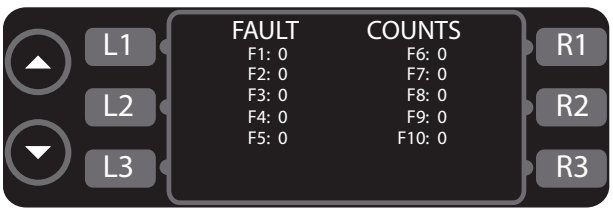


Figure 28: Fault Counts Screen

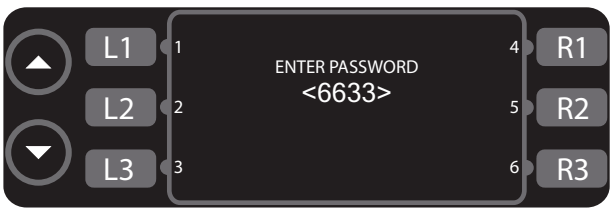


Figure 30: Password Screen

Figure 29: Setup Mode

Figure 31: Edit Option Screen

NOTE: If the update is unsuccessful, the display will remain off and the oven will beep one long, low tone. If this occurs, repeat the above procedure. If the update fails multiple times, a smart card may be damaged. Please note that the oven will be inoperable until a successful update is performed. As such, TurboChef reinforces proper handling of smart cards to help prevent static damage, and recommends that each service technician keep a backup copy.

Test Mode

The TEST MODE serves the following purposes:
- To test individual oven components.
- To view oven information.
- To reset oven parameters.
- To input a new serial number.

To access the TEST MODE,
1. Press the up key from the OVEN OFF or COOLING DOWN MODE to access the CONFIG MODE.
2. Press the R3 soft key (Figure 24, page 17).
3. Input the password 2 4 3 3 (Figure 35).

The TEST MODE consists of two screens (Figures 33 and 34). Use the up and down keys to navigate between them.

From screen 1 of the TEST MODE, the user can:
-Access the heat control screen.
-Access the belt control screen.
-Manipulate the top and bottom blowers.
-View the status indicators.

From screen 2 of the TEST MODE, the user can:
- Input a new serial number
- Initiate a burn-in test
- Erase oven settings and fault counts
- Change the maximum temperature from 550°F to 600°F, or vice versa.

NOTE: DO NOT change this setting unless instructed by TurboChef.

- Enable/disable maintenance mode (The maintenance mode will show temperature, heater operation, and other diagnostics while the oven is running)

Accessing the Heat Control Screen

From screen 1 of the TEST MODE (Figure 33), press L1 to access the heat control screen (Figure 36).

NOTE: This mode is intended for setting gas pressures on other TurboChef conveyor ovens. Even though the HhC 2020 is electric, this mode can be used to energize the heaters to verify proper operation and readings.
- Press L1 to turn the heaters on.
- Press R1 to turn the heaters off.

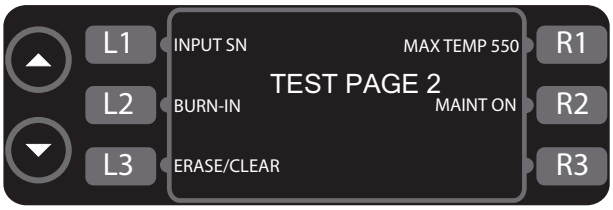


Figure 34: Test Mode Screen 2

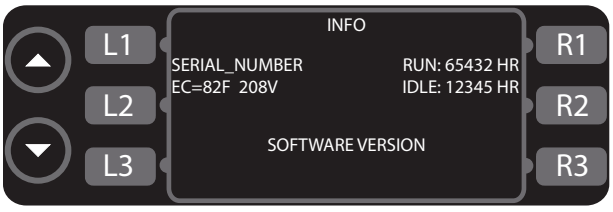


Figure 32: Info Screen

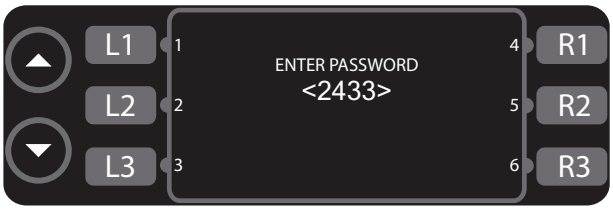


Figure 35: Password Screen

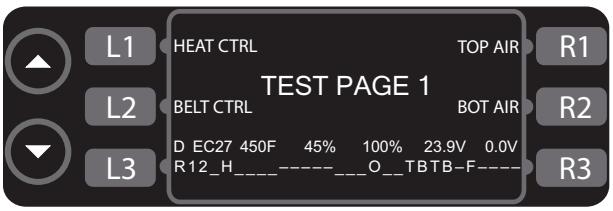


Figure 33: Test Mode Screen 1

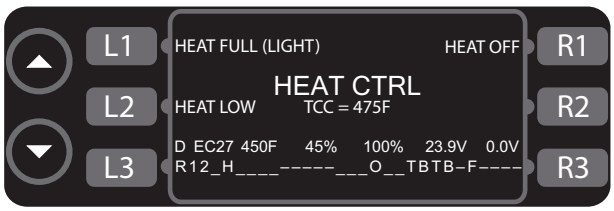


Figure 36: Heat Control Screen

Accessing the Belt Control Screen

From TEST MODE screen 1 (Figure 33, page 19), press L2 to access the belt control screen (Figure 34). Use this mode to verify the belts work correctly. The number after the belt speed shows the pulses read by the HES. The percentage is the amount of drive being asked of the CMSC (100% = 10VDC).

To change the belt's setting,
- -Press L1 to turn the belts off.
- -Press L2 to access the belt F controls.
- -Press L3 to access the belt R controls.

Manipulating the Top and Bottom Blowers

Figure 33, page 19.

The user can change the speed of the top and bottom blowers independently. To change the speed of the blowers,

1. From screen 1 of the TEST MODE, press R1 to access the top blower or R2 to access the bottom blower.
2. Press the up or down keys to change the speed of the selected blower in 5% increments. The percentage of air cannot go below 10% or above 100%.

Viewing the Status Indicators

Figure 38

The status indicators are located at the bottom of TEST MODE screen 1 and the heat control screen. The status indicators are split into two display lines.

Top Display Line

Figure 38.

The top display line shows values relating to oven components.

a Shows which key is currently pressed.
- -U = up key
- -D = down key
- -a = L1
- -b = L2
- -c = L3
- -f = R1
- -g = R2
- -h = R3
- -P = back/off key
- -I = idle key
- -S = emergency stop key

b Shows the temperature within the electrical compartment (temperature displayed in Celsius only).

c Shows the temperature within the cook chamber.

d Not applicable to this oven.

e Shows the voltage of the power supply.

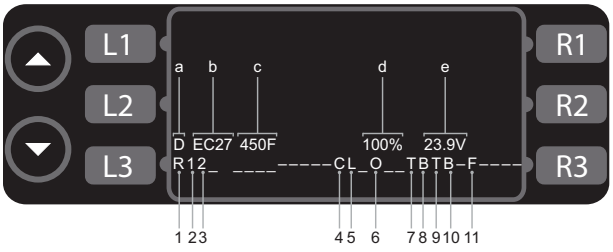


Figure 38: Status Indicator Explanation

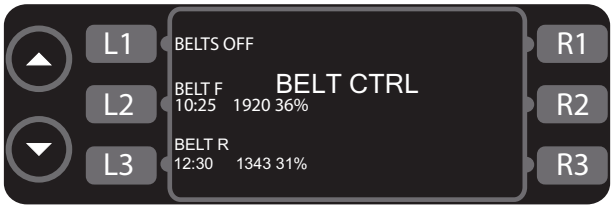


Figure 37: Belt Control Screen

Figure 39: Enter New Serial Number Screen

Bottom Display Line

The bottom display line shows enabled inputs and outputs on the control board. The numbers 1-10 indicate the different bottom display line, which are explained below.

NOTE: A "-" or "_" displayed on the bottom display line denotes values that are in the off mode or closed.

1 "R" represents the real time clock pulse used by the control board to time oven functions. The "R" will blink once per second.

2 The "1" shows that the rear belt's conveyor motor's Hall Effect Sensor (HES) is sending a pulse to the control board.

3 The "2" shows that the front belt's conveyor motor's HES is sending a pulse to the control board.

4 The "C" will only appear if the voltage is below 220.

5 The "L" signifies that this is an electric oven.

6 The "O" will only be missing during an F8: High Limit Tripped fault.

7 The first "T" is displayed while the top air BMSC reports an ok status to the control board.

8 The first "B" is displayed while the bottom air BMSC reports an ok status to the control board.

9 The second "T" is displayed while the top air BMSC is enabled and receiving a command.

10 The second "B" is displayed while the bottom air BMSC is enabled and receiving a command.

11 If the "F" is displayed, the belts are traveling right to left. If the "F" is not displayed, the belts are traveling left to right.

Entering a New Serial Number

Figure 39

1. Press L1 (Figure 34, page 19) on screen 2 of the TEST MODE to access the serial number input screen.

2. Enter the new serial number.

   - The up key moves up through the available characters. i.e. A,B,C…

   - The down key moves down through the available characters i.e. A,+,-, ,9,8,…

   - INS (L1) inserts a space.

   - DEL (R1) deletes the selected character.

   - ---> (R2) moves the cursor to the right.

   - <--- (L2) moves the cursor to the left.

3. Press R3 to save the changes or L3 to cancel.

Initiating a Burn-In Test

NOTE: Burn-in tests are for manufacturing use only. DO NOT initiate a burn-in test unless expressly instructed by TurboChef.

To initiate a burn-in test, Press L2 (Figure 34, page 19) on screen 2 of the TEST MODE.

The burn-in test (Figure 40) runs the oven for 45 minutes to ensure correct oven operation. When the burn-in test completes, the burn-in complete screen (Figure 41) will appear. Press any key to send the oven to the COOLING DOWN MODE. If the burn-in test fails, the applicable error code will appear and the oven will return to the COOLING DOWN or OVEN OFF MODE.

Erasing Oven Settings

To erase oven settings, press L3 (Figure 34, page 19) on screen 2 of the TEST MODE to access the erase screen (Figure 42). From the erase screen,

- Press L1 to erase all menu, belt, and configuration settings.
- Press L2 to clear the fault counters.
- Press L3 to clear the operational hours.

The oven will ask you to confirm the action (Figure 43 shows the confirm clear faults screen); press R3 to confirm or the back/off key to cancel.

⚠ CAUTION: Settings, fault counts, and hours cannot be retrieved once the erase option is confirmed.

Viewing the Serial Number

The serial number is located at the bottom of screen 2 of the TEST MODE (Figure 34, page 19).

⚠ CAUTION: Write this number down before replacing the I/O control board. Replacing the I/O control board will erase this number from the oven's memory.

If replacing a control board, see page 21 for re-entering the serial number.

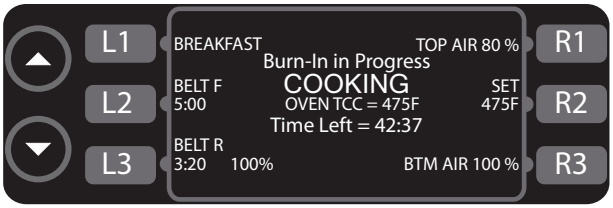


Figure 40: Burn-In Test Screen

Figure 42: Erase Screen

Figure 41: Burn-In Complete Screen

Figure 43: Confirm Clear Fault Counts Screen

Oven Systems

The Control System

This section contains information about the following components:

- Control Board
- Display
- EMI Filter
- Fuses
- High-limit Thermostat
- Keypad
- Power Supply, 24VDC
- Relay (K6 - Heaters)
- Relay (K7 - Conveyor Direction)
- Relay, Solid State
- RTD
- Smart Card Reader
- Speaker
- Thermostats - 120°F (Close on Rise)
- Wire Harness

This section also contains testing procedures for the following components:

- Power Supply - 24VDC
- Relay (K6 - Heaters)
- Relay (K7 - Conveyor Direction)
- RTD

Control Board

The control board is powered by the 24 VDC power supply, and sends control voltage to each relay. See schematics (pages 39-48). 24 VDC can be measured at the J9 connector, pins 19 and 8.

Display

The vacuum fluorescent display is the primary user interface, and is powered by the control board using 5 VDC. Its input voltage can be tested at J7, pins 1 and 3 (page 39-48).

EMI Filter

The EMI filter helps suppress the amount of RF "noise" emitted by the oven, also filtering noise from entering the controls.

Fuses

The control circuit is ultimately protected by two 20-amp class CC fuses, which are in the line-voltage circuit (incoming voltage). The fuses are designed to blow in case of an over-current situation.

High-Limit Thermostat

The high limit thermostat is a 3-pole, manual reset thermostat with a trip point of 572°F (300°C). The thermostat interrupts power to the heater elements.

Keypad

The keypad is an 11-key membrane switch.

Power Supply - 24VDC

The power supply converts line voltage to 24 VDC. Line voltage is connected to terminals L & N. The output (24 VDC) is on terminals "-V" and "+V".

Testing Procedure

1. Check for line voltage at terminals L & N.
2. If correct voltage is present, check output (-V & +V) for 24 VDC (with output wires disconnected).
3. If voltage is present with output wires disconnected and not present when the wires are connected, inspect the wire harness for damage or shorts (pages 39-48 for schematics).
4. If wire harness is intact and undamaged, the power supply is damaged or defective and must be replaced (page A,B,C-8).

Relays, K6 (Heaters) and K7 (Conveyor Direction)

The K6 and K7 relays are double pole, double throw relays with a 24 VDC coil. The coil resistance is 585 Ω and the contact rating is 30A at 240 VAC. When 24 VDC is applied to the coil, the normally open contacts (7 & 4 or C & NO) close, applying line voltage to energize the heaters (K6) or reverse the conveyor direction (K7).

Testing Procedure

1. Disconnect line voltage to the unit.
2. Take a resistance reading of the coil.

Continued on page 24...

3. If coil resistance is correct (585 Ω):
   a) Apply line voltage to the unit.
   b) Check for 24 VDC at the coil of the relay when the unit is calling for heat.
   c) Check the state of the contacts.

   -If the normally open contacts (7 & 4 or C & NO) are closed when coil voltage is applied, the relay is functioning normally.

   -If the normally open contacts (7 & 4 or C & NO are not closed when coil voltage is applied, the relay must be replaced (page A,B,C-6 and A,B,C-8).

4. If the coil resistance is incorrect, replace the relay.

Relay, Solid State - K5/K4 Heaters

The solid state relay is a 240 VAC, dual 40-amp relay, and switches power to the heaters.

RTD

The RTD is a resistance temperature detector used to detect the cavity temperature.

Testing Procedure

1. Disconnect the RTD from the control board.
2. Place the RTD in a bowl of ice water for 2 minutes.
3. Take a resistance reading of the RTD.
4. If RTD resistance is not 100 Ω, RTD is defective and must be replaced.

NOTE: Use Figure 44 to determine resistance readings at temperatures other than freezing.

Smart Card Reader

The smart card reader allows the oven operator to load a menu/firmware update from a smart card. A menu that already exists in the oven can also be saved to a smart card. For instructions, see page 17.

Speaker

The speaker is separate from the control board, and provides audible feedback to the oven operator whenever a key is pressed or a fault occurs.

Thermostats - 120°F (Close on Rise)

The cooling fan thermostats actuate the cooling fans when the temperature in either end bell reaches or exceeds 120°F (49°C).

Wire Harness

The wire harness distributes power to the electrical components. See pages 39-48 for schematics.

°F	0°	+20°	+40°	+60°	+80°	+100°	+120°	+140°	+160°	+180°	+200°
0°	90.03Ω	97.39Ω	101.74Ω	106.07Ω	110.38Ω	114.68Ω	118.97Ω	123.24Ω	127.50Ω	131.74Ω	135.97Ω
+200°	135.97Ω	140.18Ω	144.38Ω	148.57Ω	152.74Ω	159.90Ω	161.04Ω	165.17Ω	169.29Ω	173.39Ω	177.47Ω
+400°	177.47Ω	181.54Ω	185.60Ω	189.64Ω	193.67Ω	197.69Ω	201.69Ω	205.67Ω	209.64Ω	213.60Ω	217.54Ω
+600°	217.54Ω	221.47Ω	225.38Ω	229.28Ω	233.17Ω	237.04Ω	240.90Ω	244.74Ω	248.57Ω	252.38Ω	256.18Ω

°C	0°	+10°	+20°	+30°	+40°	+50°	+60°	+70°	+80°	+90°	+100°
0°	100.00Ω	103.90Ω	107.79Ω	111.67Ω	115.54Ω	119.40Ω	123.24Ω	127.07Ω	130.89Ω	134.70Ω	138.50Ω
+100°	138.50Ω	142.29Ω	146.06Ω	149.82Ω	153.58Ω	157.31Ω	161.04Ω	164.76Ω	168.46Ω	172.16Ω	175.84Ω
+200°	175.84Ω	175.91Ω	183.17Ω	186.82Ω	190.45Ω	194.07Ω	197.69Ω	201.29Ω	204.88Ω	208.45Ω	212.02Ω
+300°	212.02Ω	215.57Ω	219.12Ω	222.65Ω	226.17Ω	229.67Ω	233.17Ω	236.65Ω	240.13Ω	243.59Ω	247.04Ω

Figure 44: Temperature/Resistance Relationship Class B. Resistance @ 0°C = 100.0, Alpha = 0.003850

The Conveyor System

This section contains information about the following components, as well as testing procedures:

- Gear Drive (Conveyor Motor)
- Gear Drive (Conveyor Motor) Speed Controller (CMSC)

Gear Drive (Conveyor Motor)

The conveyor motor is a 1610 RPM, 3-phase motor with a built-in Hall Effect Sensor. The speed of the conveyor motor is controlled by the voltage frequency applied to the windings from the CMSC. The Hall Effect Sensor sends a DC pulse back to the control board to verify motor speed. The control board uses these pulses to determine the output DC voltage to the CMSC.

Single-belt ovens contain one gear drive. Dual-belt ovens contains two gear drives.

Testing Procedure

1. Disconnect line voltage from the unit.
2. Take a resistance reading of the motor windings and use Figure 45 to verify that the resistance readings are correct.
3. If the resistance readings are correct, reconnect the motor wiring and then apply line voltage to the unit and check for voltage applied to the motor windings.
4. If no voltage is present, ensure the CMSC is operating properly (see below).
5. If CMSC is operating properly, inspect the wire harness for damage or shorts.
6. If the wire harness is intact and undamaged, and the CMSC is operating properly, the gear drive is damaged or defective and must be replaced.

To	From	Description	Expected Resistance
White	Grey	Winding (A-B)	305-315 Ω
White	Black	Winding (A-C)	305-315 Ω
Grey	Black	Winding (B-C)	305-315 Ω
White, Grey, or Black	Green	Windings to chassis	Open

Figure 45: Conveyor Motor Ohm Chart

Gear Drive (Conveyor Motor) Speed Controller (CMSC)

The CMSC converts single-phase line voltage to a three-phase output, and controls the speed of the gear drive via frequency output. The CMSC receives an input voltage (0-10VDC) from the control board and adjusts the frequency output to the gear drive.

Testing Procedure

⚠ WARNING: Capacitors within the CMSC can retain charge after power is removed. Exercise extreme caution when handling the terminals.

⚠ WARNING: DO NOT connect incoming AC power to output terminals U, V, or W. This will seriously damage the Conveyor Motor Speed Controller.

1. Ensure that no faults appear on the display of the CMSC during oven operation. The control will display the frequency output if the system is operating correctly.
2. Check the input voltage on terminals L1 & L2 (200-240 VAC) and the DC voltage input on terminals 0V & AI (0.1-10 VDC).
3. If no input voltage is present, inspect the wire harness for damage or shorts (pages 37-38).
4. If DC control voltage is not present, check voltage output at I/O board. If no voltage is present at the I/O board, replace the board.
   J10-A13 to J9-C6 = front belt
   J10-A14 to J10-A6 = rear belt.
5. Check ohms of motor (Figure 45).
6. If wire harness is intact and undamaged, the CMSC is damaged or defective and must be replaced.

Accessing Parameters

⚠ WARNING: DO NOT perform this procedure unless instructed by TurboChef. Changing the parameters to other than those preset by TurboChef can damage critical oven components.

NOTE: "Motor Rated Speed" (07) is RPM of motor before gearbox, not after.

1. Open the right end bell (page A,B,C-8).
2. Locate the CMSC (page A,B,C-8).
3. Press the Ⓜ key.
4. Use the ⌃ and ⌄ keys to navigate the parameters. See page 40.
5. Press the Ⓜ key to access the parameter shown on the CMSC display.
6. Use the ⌃ and ⌄ keys to manipulate the parameter.
7. Press the Ⓜ key to return to the parameter selection.
8. Repeat steps 4-7 to manipulate other parameters as needed.

The Convection System

This section contains information about and testing procedures for the following components:

- Blower Motor
- Blower Motor Speed Controller (BMSC)
- Heaters

Blower Motor

The convection motor is a brushless AC switch reluctance type. Its top speed is 7100 RPM at 1 HP. The motor is controlled by a proprietary controller.

Testing Procedure

1. Disconnect line voltage from the unit.
2. Make sure the motor spins freely.
3. Take a resistance reading of the motor windings and use Figure 46 to verify the resistance readings are correct.
4. If the resistance readings are correct, reconnect motor wiring and then apply line voltage to the unit and check for voltage applied to the motor windings.
5. If no voltage is present, ensure the BMSC is operating properly (see below).
6. If BMSC is operating properly, inspect the wire harness for damage or shorts (pages 39-48).
7. If wire harness is intact and undamaged and the BMSC is operating properly, the blower motor is damaged or defective and must be replaced (page A,B,C-6 = lower, A,B,C-8 = upper).

Blower Motor Speed Controller (BMSC)

The motor controller is proprietary and will only operate the convection motor described above. The motor controller is controlled on command from the I/O control board and a 0-10VDC speed command from the I/O control board. See pages 27-28 for troubleshooting.

Heaters

The back and front convection heaters are rated at 6750 watts at 208 VAC with a resistance of 14.4 Ohms. The heaters are controlled by the K4/K5 solid state relay and can be tested in TEST MODE (see page 19).

To	From	Description	Expected Resistance
Black	Brown	Winding (A-B)	2.3-2.8 Ω
Black	White	Winding (A-C)	2.3-2.8 Ω
Red	White	Winding (B-C)	2.3-2.8 Ω
N/A	Green	Windings to chassis	Open

Figure 46: Blower Motor Ohm Chart (Motor Windings)

Troubleshooting

Overview of Troubleshooting

This section contains information on the following:

- Fault code descriptions
- Fault code troubleshooting
- Non-fault code troubleshooting

Fault Code Descriptions

Fault codes are logged in a fault counter (page 17) for troubleshooting. Upon completing the service call and restoring successful operation of the oven, the technician should clear all faults (see page 22).

F1: Blower Failure

This fault is displayed if for three consecutive times the control board does not receive the "status OK" signal from the BMSC.

The fault is cleared from the display if the blowers successfully restart upon starting a cook cycle or in TEST MODE.

F2: Low Temp During Cook

The oven will emit a beeping noise and display this fault if the cook cavity temperature falls 25°F (14°C) below the current cooking profile's set temperature, and the fault will be logged in the fault counter.

The fault is cleared from the fault display if the cook cavity temperature returns to within 25°F (14°C) of the set cooking temperature during cooking or in TEST MODE.

F4: Emergency Stop

This fault is displayed when the emergency stop key is pressed.

This fault acts as a counter that logs how many times the emergency stop key (page 11) has been pressed.

The fault is cleared from the display once the oven is restarted.

F5: CC Over Temp

This fault is displayed if the cook cavity's temperature reaches or exceeds 625°F (329.4°C).

The fault is cleared from the display once the oven is restarted and the temperature recedes below 625°F (329.4°C).

F6: EC Over Temp

This fault is displayed if the temperature within the electrical compartment reaches 149°F (65°C); however, the oven will not shut down and the fault will not be logged in the fault count log unless it reaches 158°F (70°C).

The fault is cleared from the display when the electrical compartment temperature recedes below 149°F (65°C).

F7: RTD Failure

This fault is displayed if the RTD circuit is open, shorted, reads above 645°F (340.5°C), or reads below -40°F (-40°C).

The fault is cleared from the display if the RTD circuit is closed, or the temperature reads within 645°F (340.5°C) and -40°F (-40°C)

F8: High Limit Tripped

This fault is displayed if the high limit switch trips. The switch trips when the high limit probe reads approximately 600°F (315.5°C).

The fault is cleared from the display when the high limit switch is manually reset.

F9: Belt Fault

This fault occurs if the conveyor belt fails to start or the conveyor is dragging. To assist troubleshooting, there are 6 detailed additions:

F9-1: REAR BELT CONTROLLER: Rear belt speed controller has closed its fault relay

F9-2: REAR BELT SPEED FAULT: Rear belt cannot control its speed (was F9)

F9-3: REAR BELT HALL FAULT: Rear belt hall sensor not putting out pulses

F9-4: FRONT BELT CONTROLLER: Front belt speed controller has closed its fault relay

F9-5: FRONT BELT SPEED FAULT: Front belt cannot control its speed (was F9)

F9-6: FRONT BELT HALL FAULT: Front belt hall sensor failed

NOTE: If your oven was manufactured in 2011 or earlier, it may only be able to report F9, without detailed additions.

The fault is cleared from the display if the conveyor belt starts when initiating cooking.

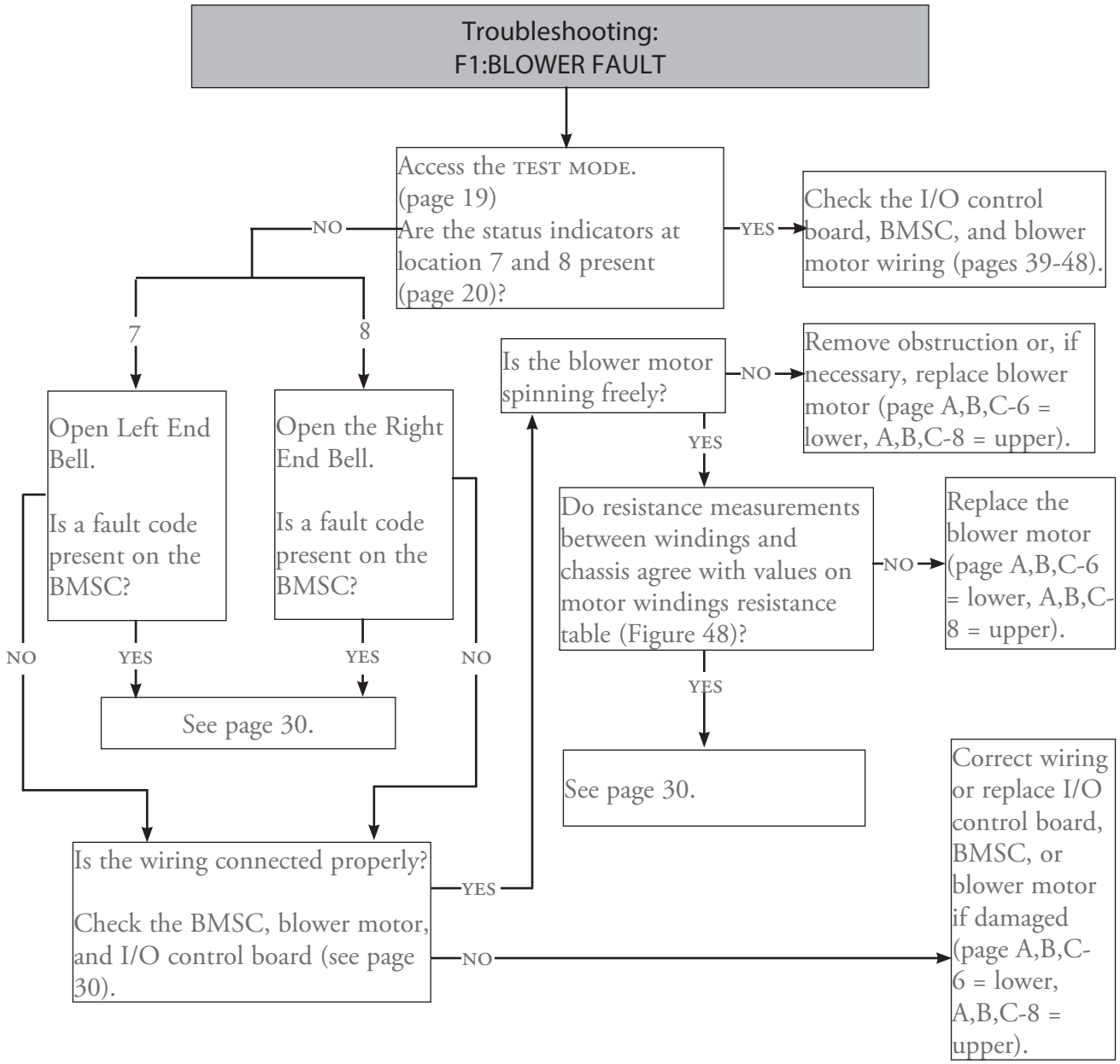
Fault Code and Description	When Active				Refer to...
	Warming	Idle	Cooking	Test	
F1: Blower Failure	✔	✔	✔	✔	Pages 29-30
F2: Low Temp During Cook			✔		Page 31
F4: Emergency Stop	✔	✔	✔	✔	N/A
F5: CC Over Temp		✔	✔	✔	Page 32
F6: EC Over Temp	✔	✔	✔	✔	Page 33
F7: RTD Failure	✔	✔	✔	✔	Page 34
F8: High Limit Tripped		✔	✔	✔	Page 34
F9: Belt Fault	✔	✔	✔		Page 35

Figure 47: Fault Code Table

NOTE: All fault codes except F2 and F9 will terminate cooking upon discovery. Any fault that occurs will be logged in the in the fault count log (page 17), except F6.

Fault Code Troubleshooting

From TEST MODE, you can test separate oven components to help diagnose an issue. To access TEST MODE, see page 19.


Troubleshooting:
F1:BLOWER FAULT
Access the TEST MODE. (page 19) Are the status indicators at location 7 and 8 present (page 20)?
NO
YES
Check the I/O control board, BMSC, and blower motor wiring (pages 39-48).
7
8
Open Left End Bell. Is a fault code present on the BMSC?
Open the Right End Bell. Is a fault code present on the BMSC?
NO
YES
YES
NO
See page 30.
Is the blower motor spinning freely?
NO
Remove obstruction or, if necessary, replace blower motor (page A,B,C-6 = lower, A,B,C-8 = upper).
YES
Do resistance measurements between windings and chassis agree with values on motor windings resistance table (Figure 48)?
NO
Replace the blower motor (page A,B,C-6 = lower, A,B,C-8 = upper).
YES
See page 30.
Is the wiring connected properly? Check the BMSC, blower motor, and I/O control board (see page 30).
YES
NO
Correct wiring or replace I/O control board, BMSC, or blower motor if damaged (page A,B,C-6 = lower, A,B,C-8 = upper).

To	From	Description	Expected Resistance
Black	Red	Winding (A-B)	2.3-2.8 Ω
Black	White	Winding (A-C)	2.3-2.8 Ω
Red	White	Winding (B-C)	2.3-2.8 Ω
N/A	Green	Windings to chassis	Open

Figure 48: Motor Windings Resistance Table

Blower Motor Troubleshooting

NOTE: Continued from page 29.

1. Verify motor spins freely.
   - Motor seized: Unplug oven and correct obstruction or replace motor.
   - Motor spins freely: Verify motor windings (see Figure 48, page 29).

2. Verify motor windings are OK. Measure the resistance between windings and chassis. Unplug oven and replace motor if resistances do not agree with the values in the table on page 29. If motor is OK, proceed to step 3, below.

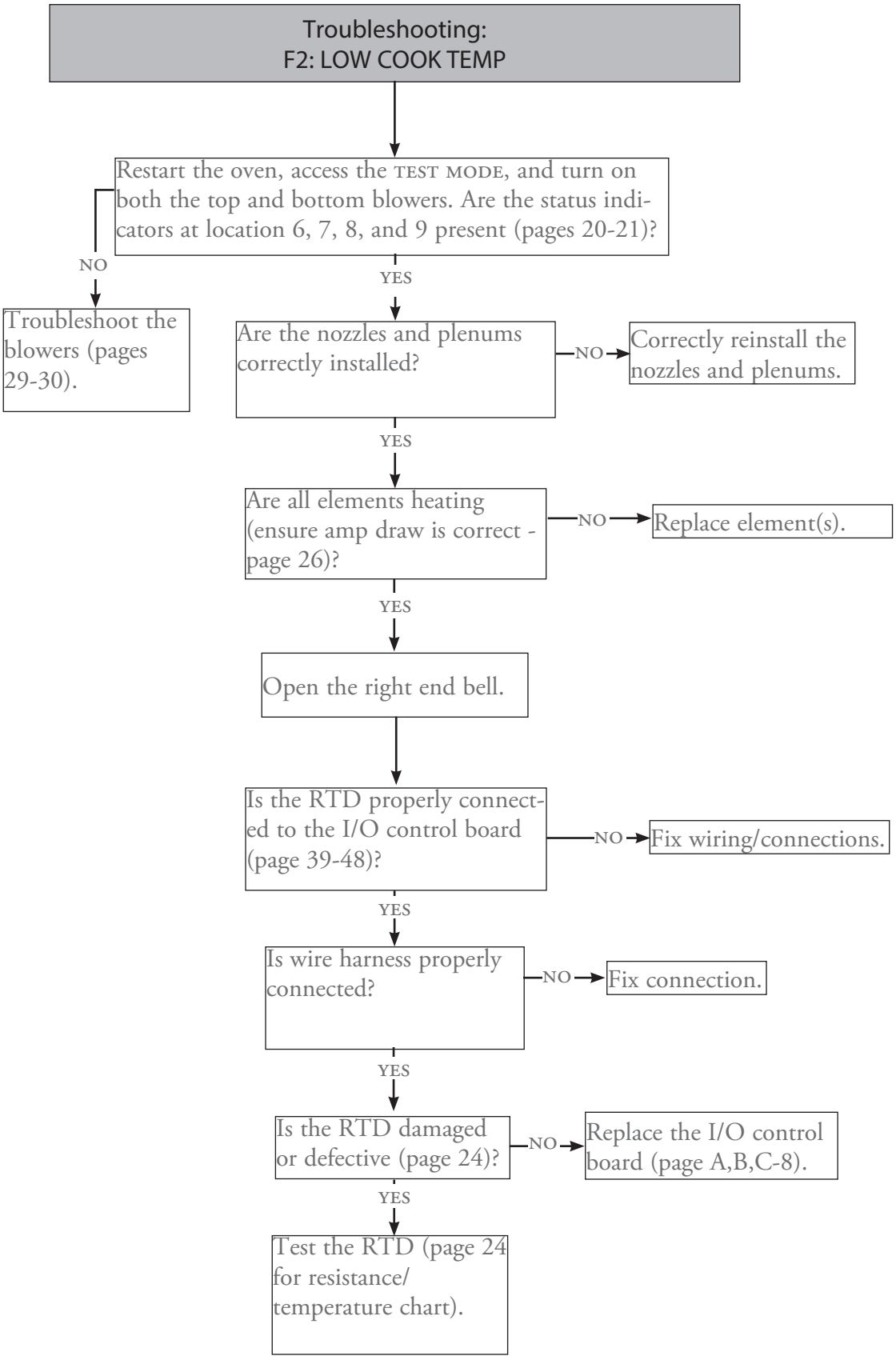
3. Status indicators TBTB should be visible when motors are on in TEST MODE. If any of these indicators are not present (for example, TB_B):

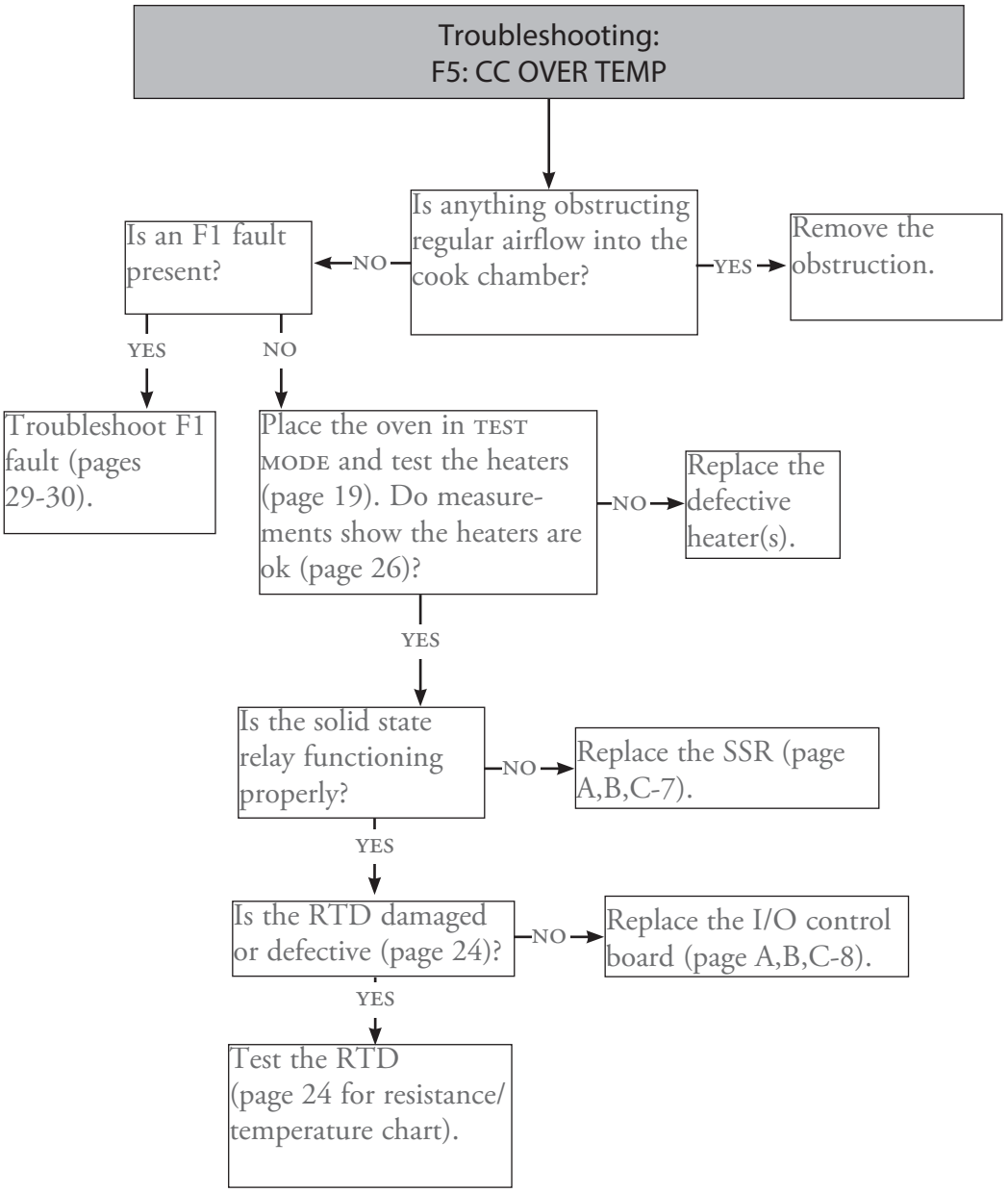
   a. Disconnect control wiring.

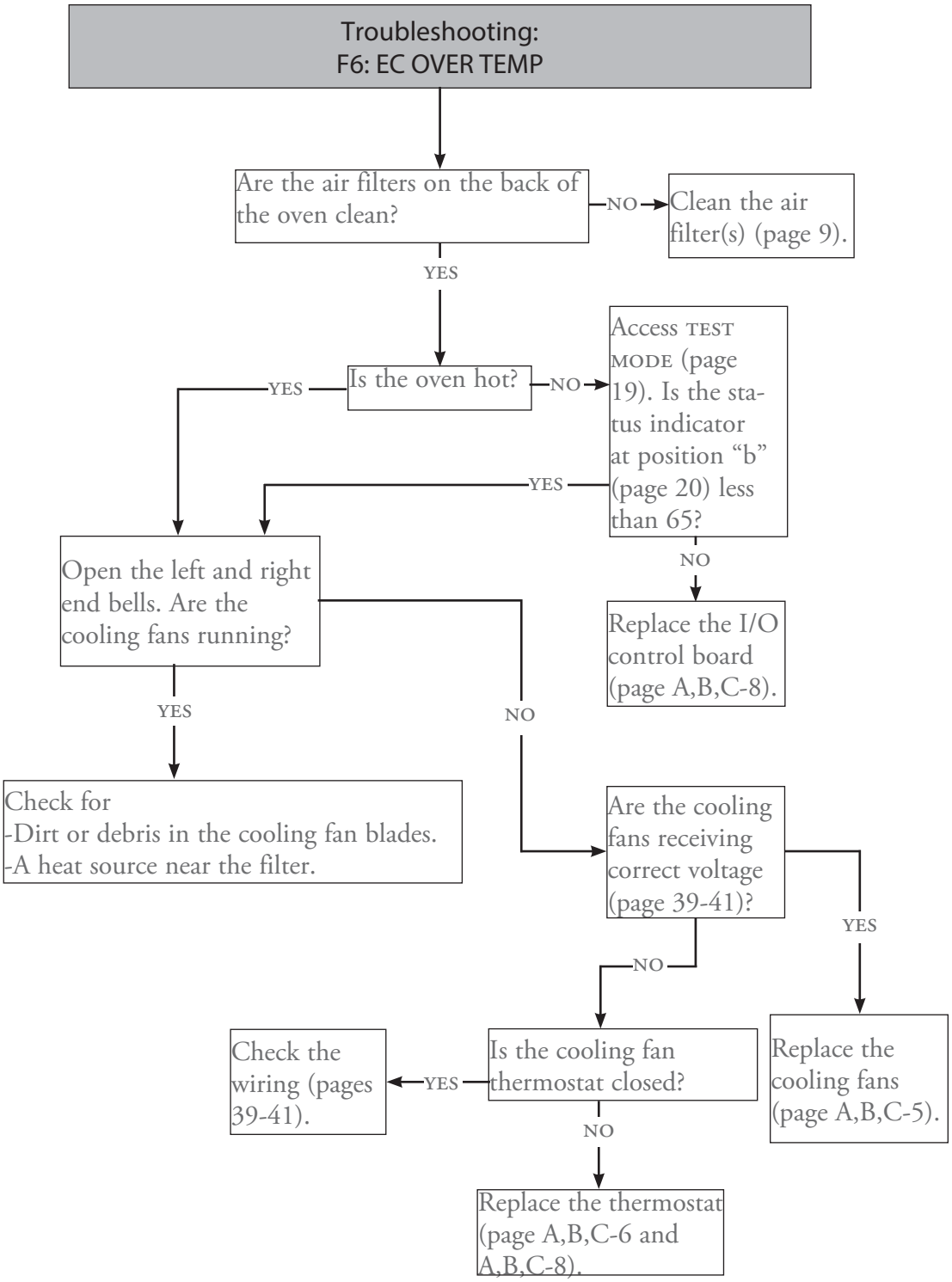
   b. Ground the "Status OK" wire of the motor controller that is being tested (pin 5 on the J2 connector) to chassis (reference wiring schematic of the blower motor controllers on pages 39-48).

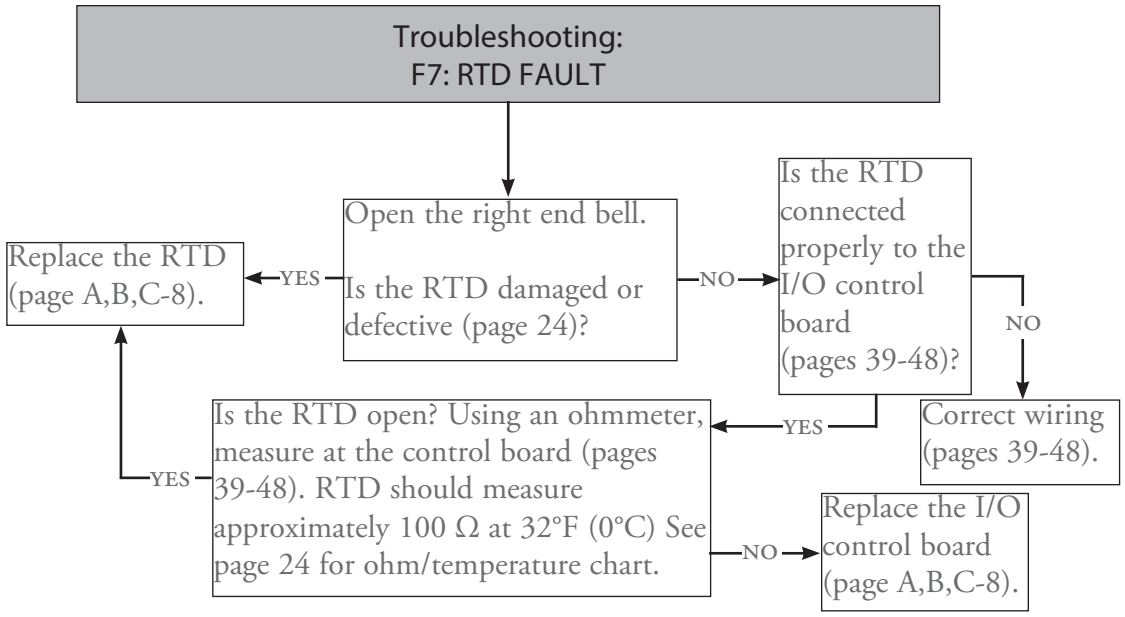
   c. Keeping the wire grounded, check terminals on the control wiring plug for 0-10 VDC control voltage (reference drawing of Control Pinouts, pages 39-48) while incrementing blower speed in TEST MODE (see *Manipulating Top and Bottom Blowers*, page 20, and page 19 for an illustration of TEST MODE).

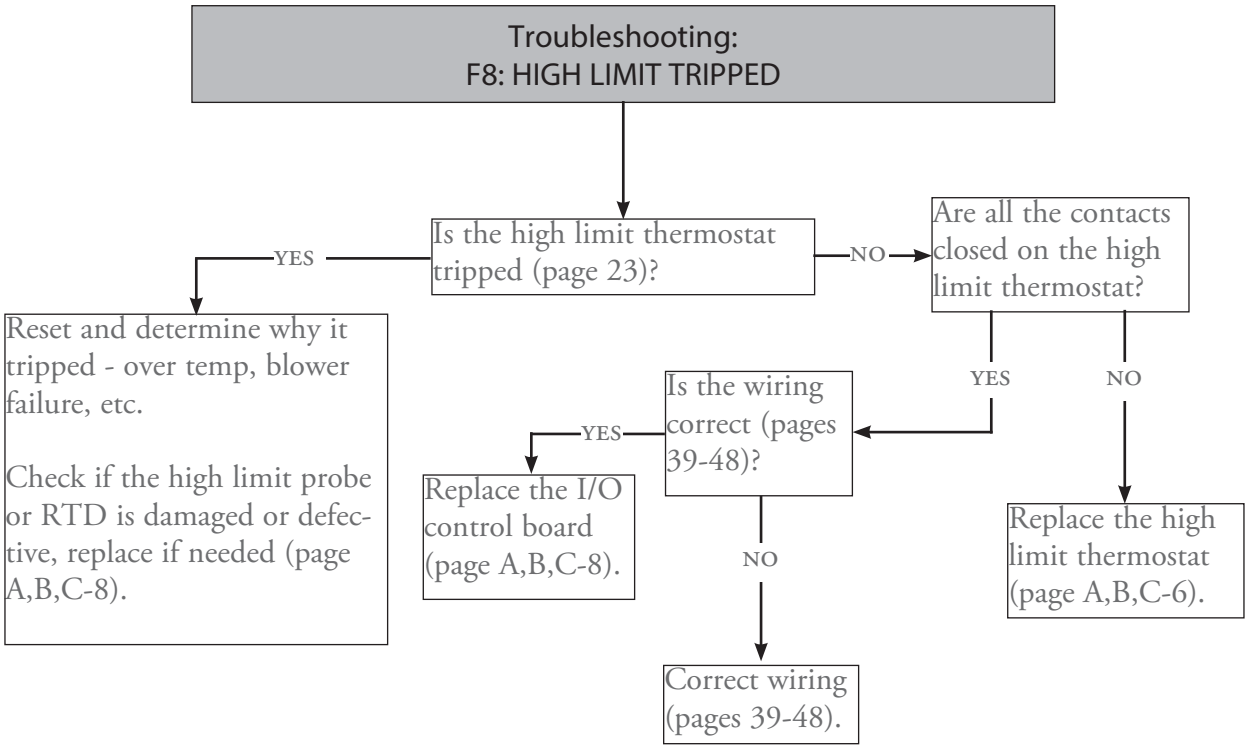
   d. If DC voltage is present throughout all speed settings in TEST MODE (see *Manipulating Top and Bottom Blowers*, page 20, and page 19 for an illustration of TEST MODE), replace motor controller. If not, check harness and/or replace I/O board.

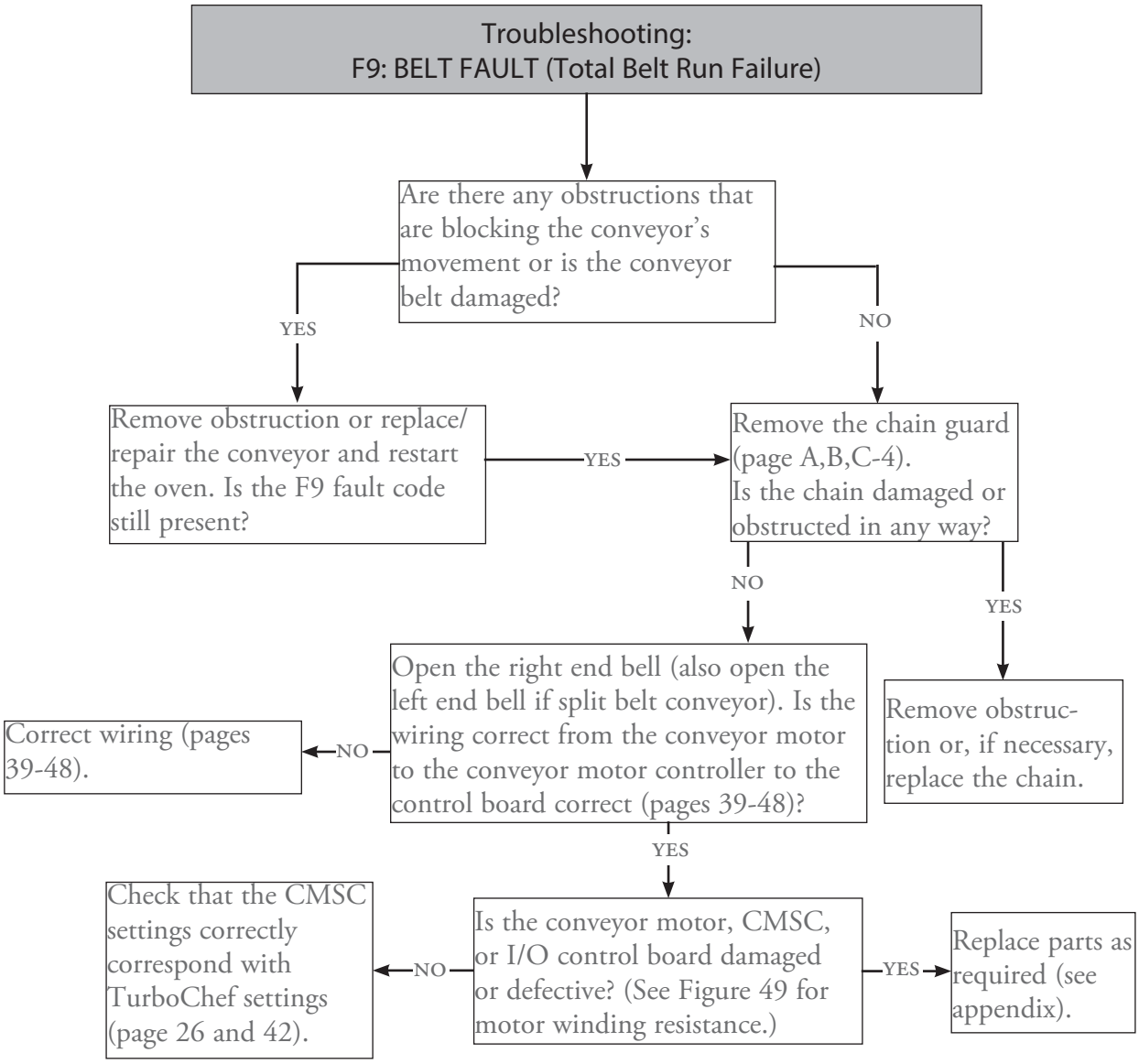

Troubleshooting:
F2: LOW COOK TEMP
Restart the oven, access the TEST MODE, and turn on both the top and bottom blowers. Are the status indicators at location 6, 7, 8, and 9 present (pages 20-21)?
NO
YES
Troubleshoot the blowers (pages 29-30).
Are the nozzles and plenums correctly installed?
NO
Correctly reinstall the nozzles and plenums.
YES
Are all elements heating (ensure amp draw is correct - page 26)?
NO
Replace element(s).
YES
Open the right end bell.
Is the RTD properly connected to the I/O control board (page 39-48)?
NO
Fix wiring/connections.
YES
Is wire harness properly connected?
NO
Fix connection.
YES
Is the RTD damaged or defective (page 24)?
NO
Replace the I/O control board (page A,B,C-8).
YES
Test the RTD (page 24 for resistance/ temperature chart).


Troubleshooting:
F5: CC OVER TEMP
Is anything obstructing regular airflow into the cook chamber?
NO
YES
Remove the obstruction.
Is an F1 fault present?
YES
NO
Troubleshoot F1 fault (pages 29-30).
Place the oven in TEST MODE and test the heaters (page 19). Do measurements show the heaters are ok (page 26)?
NO
Replace the defective heater(s).
YES
Is the solid state relay functioning properly?
NO
Replace the SSR (page A,B,C-7).
YES
Is the RTD damaged or defective (page 24)?
NO
Replace the I/O control board (page A,B,C-8).
YES
Test the RTD (page 24 for resistance/ temperature chart).


Troubleshooting:
F6: EC OVER TEMP
Are the air filters on the back of the oven clean?
NO
Clean the air filter(s) (page 9).
YES
Is the oven hot?
YES
NO
Access TEST MODE (page 19). Is the status indicator at position "b" (page 20) less than 65?
YES
NO
Open the left and right end bells. Are the cooling fans running?
Replace the I/O control board (page A,B,C-8).
YES
NO
Check for
-Dirt or debris in the cooling fan blades.
-A heat source near the filter.
Are the cooling fans receiving correct voltage (page 39-41)?
YES
NO
Check the wiring (pages 39-41).
YES
Is the cooling fan thermostat closed?
Replace the cooling fans (page A,B,C-5).
NO
Replace the thermostat (page A,B,C-6 and A,B,C-8).


Troubleshooting:
F7: RTD FAULT
Open the right end bell.
Is the RTD damaged or defective (page 24)?
YES
Replace the RTD (page A,B,C-8).
NO
Is the RTD connected properly to the I/O control board (pages 39-48)?
NO
Correct wiring (pages 39-48).
YES
Is the RTD open? Using an ohmmeter, measure at the control board (pages 39-48). RTD should measure approximately 100 Ω at 32°F (0°C) See page 24 for ohm/temperature chart.
YES
NO
Replace the I/O control board (page A,B,C-8).


Troubleshooting:
F8: HIGH LIMIT TRIPPED
Is the high limit thermostat tripped (page 23)?
YES
Reset and determine why it tripped - over temp, blower failure, etc.
Check if the high limit probe or RTD is damaged or defective, replace if needed (page A,B,C-8).
NO
Are all the contacts closed on the high limit thermostat?
YES
Is the wiring correct (pages 39-48)?
YES
Replace the I/O control board (page A,B,C-8).
NO
Correct wiring (pages 39-48).
NO
Replace the high limit thermostat (page A,B,C-6).

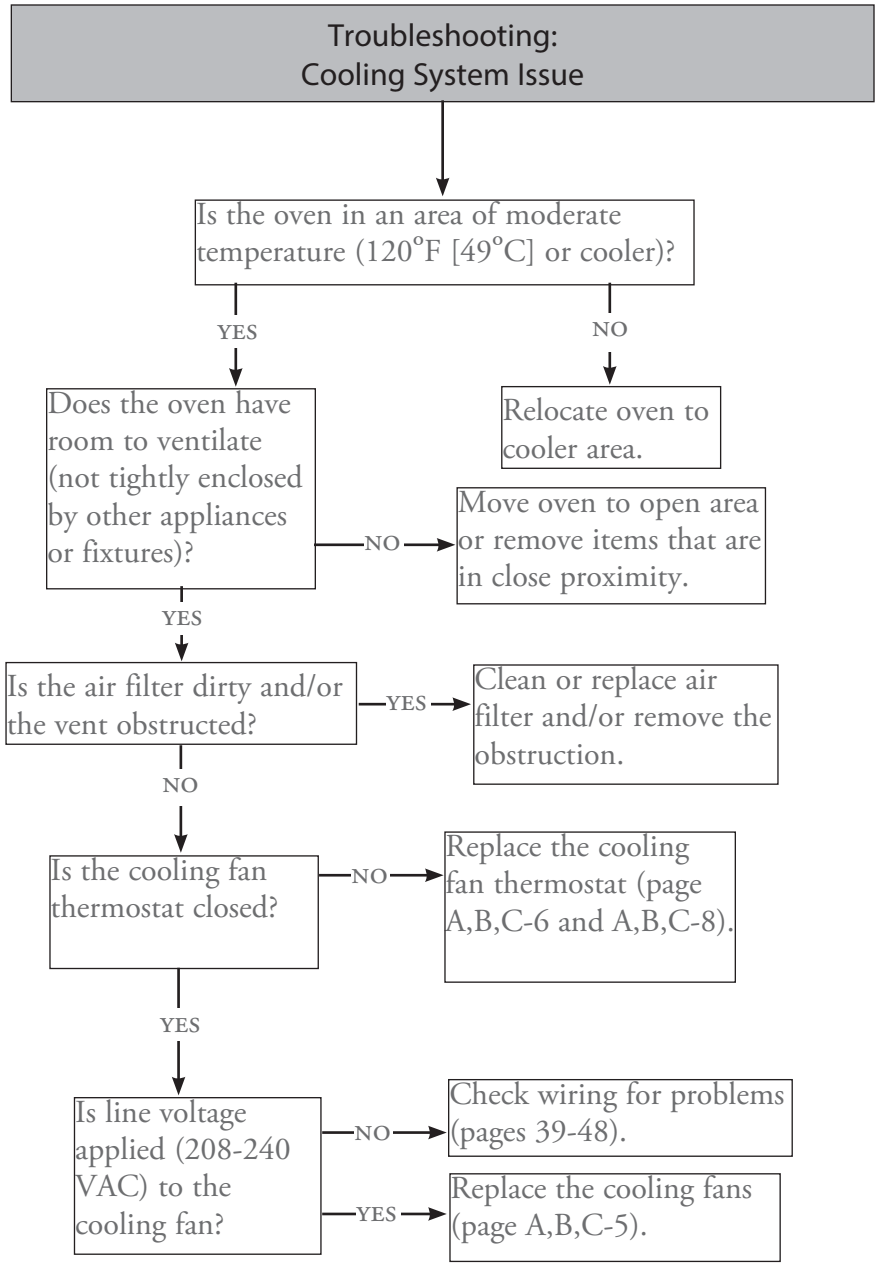

Troubleshooting:
F9: BELT FAULT (Total Belt Run Failure)
Are there any obstructions that are blocking the conveyor's movement or is the conveyor belt damaged?
YES
NO
Remove obstruction or replace/ repair the conveyor and restart the oven. Is the F9 fault code still present?
YES
Remove the chain guard (page A,B,C-4). Is the chain damaged or obstructed in any way?
NO
YES
Open the right end bell (also open the left end bell if split belt conveyor). Is the wiring correct from the conveyor motor to the conveyor motor controller to the control board correct (pages 39-48)?
Remove obstruction or, if necessary, replace the chain.
NO
Correct wiring (pages 39-48).
YES
Is the conveyor motor, CMSC, or I/O control board damaged or defective? (See Figure 49 for motor winding resistance.)
YES
Replace parts as required (see appendix).
NO
Check that the CMSC settings correctly correspond with TurboChef settings (page 26 and 42).

To	From	Description	Expected Resistance
White	Gray	Winding (A-B)	305-315 Ω
White	Black	Winding (A-C)	305-315 Ω
Gray	Black	Winding (B-C)	305-315 Ω
White, Gray, or Black	Chassis	Windings to chassis	Open

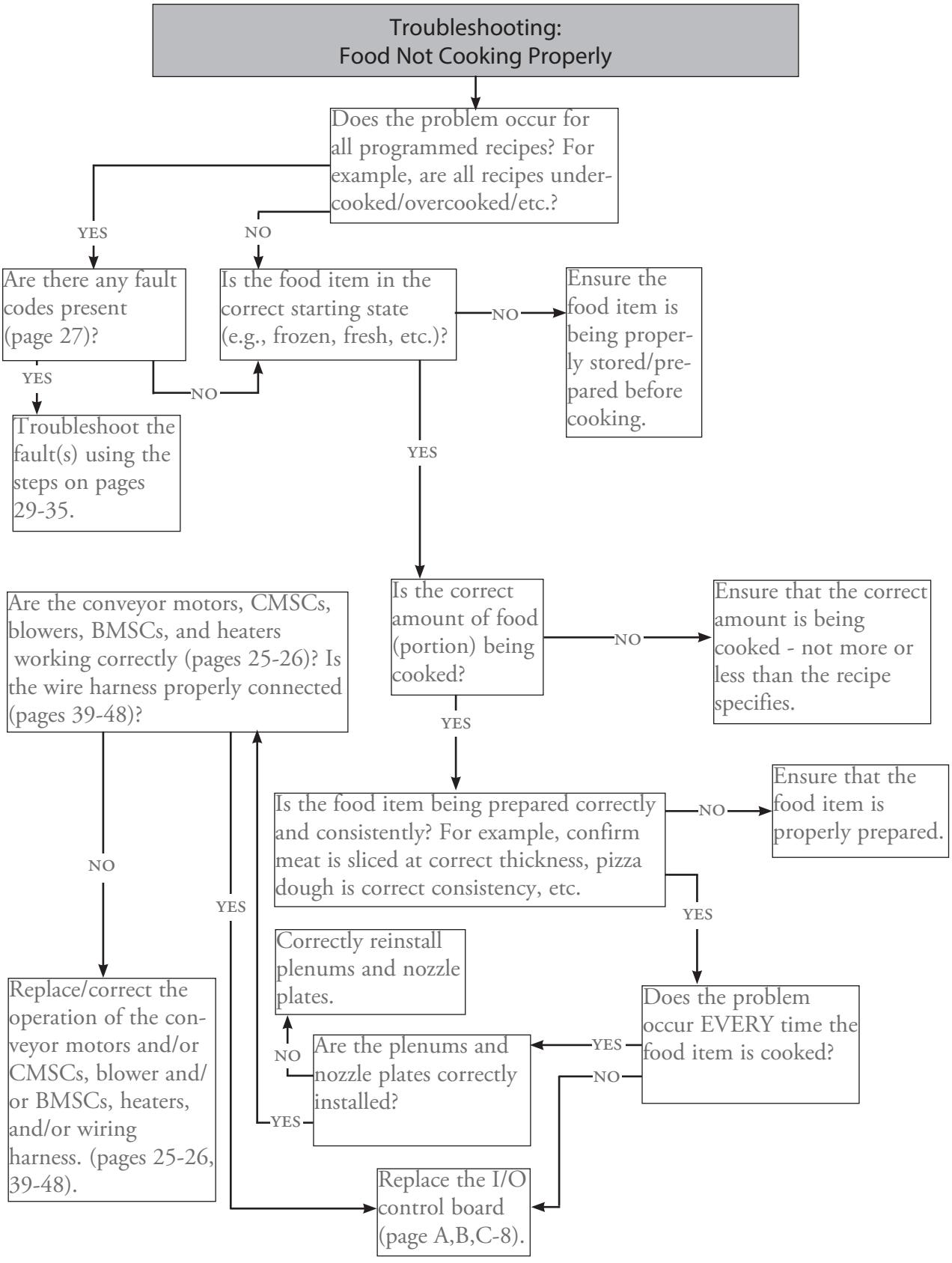
Figure 49: Motor Ohm Chart (Motor Windings, not Hall Effect Sensor)

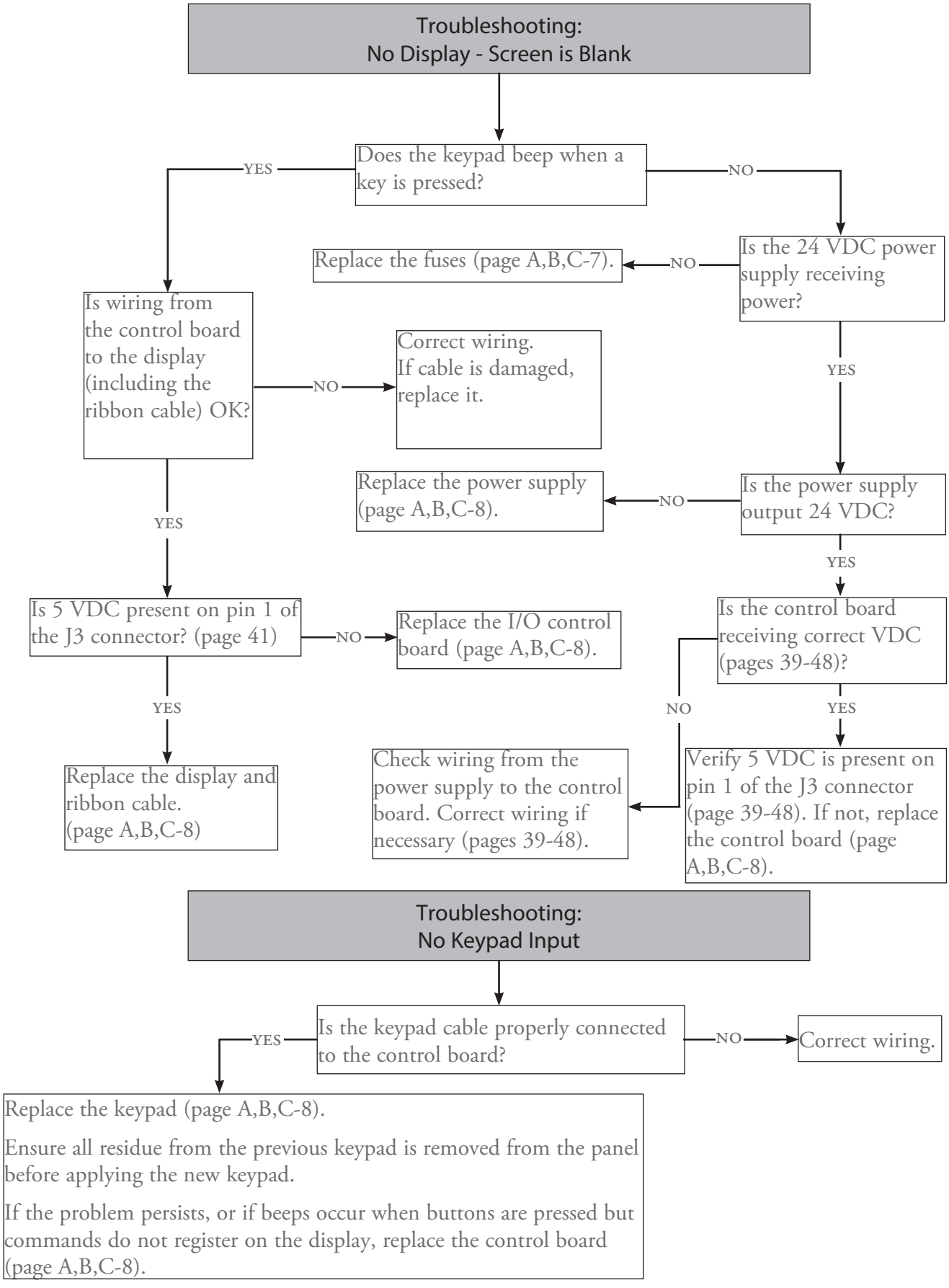
Non-Fault Code Troubleshooting

This section provides troubleshooting tips for issues that may occur independently of an oven fault.


Troubleshooting:
Cooling System Issue
Is the oven in an area of moderate temperature (120°F [49°C] or cooler)?
YES
NO
Relocate oven to cooler area.
Does the oven have room to ventilate (not tightly enclosed by other appliances or fixtures)?
NO
Move oven to open area or remove items that are in close proximity.
YES
Is the air filter dirty and/or the vent obstructed?
YES
Clean or replace air filter and/or remove the obstruction.
NO
Is the cooling fan thermostat closed?
NO
Replace the cooling fan thermostat (page A,B,C-6 and A,B,C-8).
YES
Is line voltage applied (208-240 VAC) to the cooling fan?
NO
Check wiring for problems (pages 39-48).
YES
Replace the cooling fans (page A,B,C-5).

NOTE: There are two thermostats per unit. They are wired so that if either thermostat closes, power is applied to both cooling fans.


Troubleshooting:
Food Not Cooking Properly
Does the problem occur for all programmed recipes? For example, are all recipes under-cooked/overcooked/etc.?
YES
NO
Are there any fault codes present (page 27)?
YES
Troubleshoot the fault(s) using the steps on pages 29-35.
NO
Is the food item in the correct starting state (e.g., frozen, fresh, etc.)?
NO
Ensure the food item is being properly stored/prepared before cooking.
YES
Are the conveyor motors, CMSCs, blowers, BMSCs, and heaters working correctly (pages 25-26)? Is the wire harness properly connected (pages 39-48)?
NO
Replace/correct the operation of the conveyor motors and/or CMSCs, blower and/or BMSCs, heaters, and/or wiring harness. (pages 25-26, 39-48).
YES
Is the correct amount of food (portion) being cooked?
NO
Ensure that the correct amount is being cooked - not more or less than the recipe specifies.
YES
Is the food item being prepared correctly and consistently? For example, confirm meat is sliced at correct thickness, pizza dough is correct consistency, etc.
NO
Ensure that the food item is properly prepared.
YES
Does the problem occur EVERY time the food item is cooked?
YES
NO
Are the plenums and nozzle plates correctly installed?
NO
Correctly reinstall plenums and nozzle plates.
YES
Replace the I/O control board (page A,B,C-8).


Troubleshooting:
No Display - Screen is Blank
Does the keypad beep when a key is pressed?
YES
NO
Is wiring from the control board to the display (including the ribbon cable) OK?
NO
Correct wiring.
If cable is damaged, replace it.
YES
Is 5 VDC present on pin 1 of the J3 connector? (page 41)
NO
Replace the I/O control board (page A,B,C-8).
YES
Replace the display and ribbon cable.
(page A,B,C-8)
Replace the fuses (page A,B,C-7).
NO
Is the 24 VDC power supply receiving power?
YES
Replace the power supply (page A,B,C-8).
NO
Is the power supply output 24 VDC?
YES
Is the control board receiving correct VDC (pages 39-48)?
NO
Check wiring from the power supply to the control board. Correct wiring if necessary (pages 39-48).
YES
Verify 5 VDC is present on pin 1 of the J3 connector (page 39-48). If not, replace the control board (page A,B,C-8).
Troubleshooting:
No Keypad Input
Is the keypad cable properly connected to the control board?
YES
NO
Correct wiring.
Replace the keypad (page A,B,C-8).
Ensure all residue from the previous keypad is removed from the panel before applying the new keypad.
If the problem persists, or if beeps occur when buttons are pressed but commands do not register on the display, replace the control board (page A,B,C-8).

Schematics - HhC 1618 Oven

NOTES:

COLOR CODE (LINE VOLTAGE)
BL - BLUE = LINE V (208/240)
BR - BROWN = LINE V (208/240)

COLOR CODE (LOW/CONTROL VOLTAGE)
BK - BLACK = 24 VDC COMMON
OR - ORANGE = STATUS INPUT
WH - WHITE = CONTROL OUTPUT
RD - RED = +24VDC

DISPLAY SIDE

NON-DISPLAY SIDE

DWG NO HCS-4130-1 SH 1

REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
A	ECN 1308047 CJD INITIAL RELEASE CHECKED BY DR	09-10-13	TW

KEYPAD
HHC-1234

SPEAKER
(CON-7048)

SMART CARD
READER
(100506)

(ENC-1312)
SMART CARD
CABLE

A - ANALOG

B - ADV I/O

C - STD I/O

J2-DISPLAY

(C0410)

(NGC-1530)

VFD DISPLAY
64 X 128 DOTS
(100505)

RTD
(HHC-6517-2)

MAGNETIC
SWITCH
(HHB-3209)

AU OPTION ONLY

BOTTOM BLOWER MOTOR
AND CONTROL

BOTTOM
BLOWER
MOTOR
(CCW)

(HCT-4205)

BMSC
(CON-7013)

240 VAC
3 PHASE
OUT

180-240
VAC IN

(101211)
24VDC
POWER
SUPPLY

VOLTAGE MODULE
(100783)

COOLING
FAN
(100574)

OT 1 - 120°F
(102086)

EMI FILTER
6VSK1
(100539)

CONVEYOR DIRECTION
RELAY K7
(101279)

SEE AU
OPTION

(HHC-6670-2)

CONVEYOR BELT
MOTOR AND CONTROL

(HHC-4120)

NEMA 6-50

TOP BLOWER MOTOR
AND CONTROL

TOP
BLOWER
MOTOR
(CCW)

(HCT-4205)

BMSC
(CON-7013)

EMI FILTER
6VSK1
(100539)

COOLING
FAN
(100574)

OT 1 - 120°F
(102086)

OT1
MANUAL RESET
(102075)

K6
(101279)

DISTRIBUTION BLOCK

(HCT-4141)

K4 K5

(HCT-4213)

6750W
HCT-4258

F1: 20 AMPS CLASS CC (100599)
F2: 20 AMPS CLASS CC (100599)

TURBOCHEF TECHNICAL SUPPORT
800-908-8726

SIGNATURE	DATE
DRAWN DAVE R	9/13/13
CHECKED CJD	9/13/13
APPROVED TW	9/13/13
PRODUCTION	
QA	

TURBOCHEF

TITLE
SCHEMATIC, HCS-1618
VFD DISPLAY,
1PH, 208/240 VAC, 50/60 HZ

SIZE	CODE IDENT NO	DRAWING NO
D		HCS-4130-1

SCALE NONE KEY HCS-4130-1

DASH NO	GENERAL	1618
	NEXT ASSY	USED ON
APPLICATION		

DISPLAY SIDE

NON-DISPLAY SIDE

NOTES:

COLOR CODE (LINE VOLTAGE)
BL - BLUE = LINE V (208/240)
BR - BROWN = LINE V (208/240)

COLOR CODE (LOW/CONTROL VOLTAGE)
BK - BLACK = 24 VDC COMMON
OR - ORANGE = STATUS INPUT
WH - WHITE = CONTROL OUTPUT
RD - RED = +24VDC

DWG NO HCS-4130-2 SH 1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	ECN 1308047 CJD INITIAL RELEASE CHECKED BY DR	09-10-13	TW

ALL WIRES TO BE (18-22) GA UL1213
TYPE E TEFLON (-65C TO 200C) (600 VOLTS)

KEYPAD
HHC-1234
J6
P6
P4
SPEAKER
(CON-7048)
C-7 (BLK)
C-20 (WHT)
SMART CARD
READER
(100506)
(ENC-1312)
SMART CARD
CABLE
A - ANALOG
B - ADV I/O
C - STD I/O
J2-DISPLAY
(C0410)
(NGC-1530)
VFD DISPLAY
64 X 128 DOTS
(100505)

RTD
(HHC-6517-2)
A-9 (ORG)
A-8 (ORG)
A-7 (BLK)

MAGNETIC
SWITCH
(HHB-3209)
RED (A-14)
BLACK (A-6)
ORANGE (C-10)
AU OPTION ONLY

BOTTOM BLOWER MOTOR
AND CONTROL
BOTTOM
BLOWER
MOTOR
(CCW)
M1RED
M2 BLACK
M3 WHITE
GREEN
(HCT-4205)
J5
240 VAC
3 PHASE
OUT
BMSC
(CON-7013)
J2
Analog Speed 0-10V
I/O COMMON
ENABLE
I/O COMMON
STATUS OK
I/O COMMON
A-17 (RED)
B-6 (BLACK)
B-2 (WHITE)
B-10 (ORANGE)
GND
BROWN
180-240
VAC IN
(101211)
24VDC
POWER
SUPPLY
G V- V+ L N
C-8 (BLK)
C-19 (RED)
VOLTAGE MODULE
(100783)
B-16 (ORANGE)
B-7 (BLACK)
BLUE
BROWN
COOLING
FAN
(100504)
BLUE
OT 1 - 120°F
(102086)
C NO
BROWN
EMI FILTER
6VSK1
(100539)
BLUE
BROWN

CONVEYOR DIRECTION
RELAY K7
(101279)
B-18 (RED)
C-13 (WHT)
A-14 (RED)
A-6 (BLK)
C-10 (ORG)
(HHC-6670-2)
R1.1
S/L2/N
R1A
R1B
R1C
COM
4V
6V
AO1
DI01
DCOM
DI02
L1
L2
L4
+24V
UT1
UT2
UT3
BLK
WHT
RED

CONVEYOR BELT
MOTOR AND CONTROL
(HHC-4120)
RED
WHITE
YELLOW
WHITE
GRAY
BLACK
A-16 (RED)
B-8 (BLK)
B-23 (ORG)

TOP BLOWER MOTOR
AND CONTROL
TOP
BLOWER
MOTOR
(CCW)
M1RED
M2 BLACK
M3 WHITE
GREEN
(HCT-4205)
J5
240 VAC
3 PHASE
OUT
BMSC
(CON-7013)
J2
Analog Speed 0-10V
I/O COMMON
ENABLE
I/O COMMON
STATUS OK
I/O COMMON
A-18 (RED)
A-5 (BLACK)
B-1 (WHITE)
C-1 (ORANGE)
GND
BROWN
180-240
VAC IN
BLUE
BROWN
EMI FILTER
6VSK1
(100539)
BLUE
BROWN
COOLING
FAN
(100504)
OT 1 - 120°F
(102086)
NO C
BROWN
BROWN
BROWN
BROWN
BROWN
BROWN
RED
K6
(101279)
B-18 (RED)
C-13 (WHT)
OT1
MANUAL RESET
(102075)
L3 31 32 NC
L2 21 22 NC
L1 11 12 NC
RED
WHITE
BLACK
RED
WHITE
BLACK
WHITE
BLACK
C18 (RED)
C18 (RED)
A
B
K4
K5
A2
A1
B1
B2
(HCT-4213)
C-22 (WHT)
C-22 (WHT)
BLACK
WHITE
(HCT-4141)
6 5 4 3 2 1
WHITE (5)
RED (6)
BLACK (4)
RED (3)
WHITE (2)
BLACK (1)
6750W
HCT-4258

8 6 4 2
7 5 3 1
F2 F1
RED
WHITE
BLACK
RED
WHITE
BLACK
GREEN
E1
NEMA 15-30

F1: 20 AMPS CLASS CC (100599)
F2: 20 AMPS CLASS CC (100599)

SIGNATURE	DATE
DRAWN DAVE R	9/13/13
CHECKED CJD	9/13/13
APPROVED TW	9/13/13
PRODUCTION	
QA	

TURBOCHEF

TITLE
SCHEMATIC, HCS-1618
VFD DISPLAY,
3PH, 208/240 VAC, 50/60 HZ

SIZE	CODE IDENT NO	DRAWING NO
D		HCS-4130-2
SCALE NONE	KEY HCS-4130-2	

DASH NO	GENERAL	1618
	NEXT ASSY	USED ON
APPLICATION		

TURBOCHEF TECHNICAL SUPPORT
800-908-8726

DWG NO HCS–4131–1 SH 1

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	ECN 1308047 CJD INITIAL RELEASE CHECKED BY DR	09-10-13	TW

NOTES:

COLOR CODE (LINE VOLTAGE)
BL - BLUE = LINE V (208/240)
BR - BROWN = LINE V (208/240)

COLOR CODE (LOW/CONTROL VOLTAGE)
BK - BLACK = 24 VDC COMMON
OR - ORANGE = STATUS INPUT
WH - WHITE = CONTROL OUTPUT
RD - RED = +24VDC

DISPLAY SIDE

NON-DISPLAY SIDE

KEYPAD
HHC-1234
J6
P6
C-7 (BLK)
C-20 (WHT)
SPEAKER
(CON-7048)
P4
SMART CARD
READER
(100506)
(ENC-1312)
SMART CARD
CABLE
A - ANALOG
B - ADV I/O
C - STD I/O
J2-DISPLAY
(C0410)
(NGC-1530)
VFD DISPLAY
64 X 128 DOTS
(100505)
RTD
(HHC-6517-2)
A-9 (ORG)
A-8 (ORG)
A-7 (BLK)
MAGNETIC
SWITCH
(HHB-3209)
RED (A-14)
BLACK (A-9)
ORANGE (C-19)
AU OPTION ONLY

BOTTOM BLOWER MOTOR
AND CONTROL

BOTTOM
BLOWER
MOTOR
(CCW)
M1RED
M2 BLACK
M3 WHITE
GREEN
(HCT-4205)
J5
240 VAC
3 PHASE
OUT
BMSC
(CON-7013)
J2
Analog Speed 0-10V
I/O COMMON
ENABLE
I/O COMMON
STATUS OK
I/O COMMON
A-17 (RED)
B-6 (BLACK)
B-2 (WHITE)
B-10 (ORANGE)
GND
BROWN
180-240
VAC IN
(101211)
24VDC
POWER
SUPPLY
G V- V+ L N
C-8 (BLK)
C-19 (RED)
BLUE
BROWN
COOLING
FAN
(100574)
BLUE
OT 1 - 120°F
(102086)
C NO
BROWN
EMI FILTER
6VSK1
(100539)
BLUE
BROWN
CONVEYOR DIRECTION
RELAY K7
(101279)
B-18 (RED)
C-13 (WHT)
SEE AU
OPTION
C-14 (RED)
C-9 (BLACK)
C-10 (ORG)
(HHC-6670-2)
R/L1
S/L2/N
R1A
R1B
R1C
COM
AI1
5V
AO1
DO1
DO2
COM
DI1
DI2
DI3
DI4
+24V
U/T1
V/T2
W/T3
BLK
WHT
RED
CONVEYOR BELT
MOTOR AND CONTROL
(HHC-4120)
RED
WHITE
YELLOW
WHITE
GRAY
BLACK
A-16 (RED)
B-8 (BLK)
B-23 (ORG)
BLUE
GREY
BLACK
BROWN
GREEN
E1

TOP BLOWER MOTOR
AND CONTROL

TOP
BLOWER
MOTOR
(CCW)
M1RED
M2 BLACK
M3 WHITE
GREEN
(HCT-4205)
J5
240 VAC
3 PHASE
OUT
BMSC
(CON-7013)
J2
Analog Speed 0-10V
I/O COMMON
ENABLE
I/O COMMON
STATUS OK
I/O COMMON
A-18 (RED)
A-5 (BLACK)
B-1 (WHITE)
C-1 (ORANGE)
GND
180-240
VAC IN
BROWN
BLUE
EMI FILTER
6VSK1
(100539)
COOLING
FAN
(100574)
OT 1 - 120°F
(102086)
NO C
BROWN
BLUE
RED
K6
(101279)
B-18 (RED)
C-13 (WHT)
OT1
MANUAL RESET
(102075)
L2
NC
C
WHITE
BLACK
C18 (RED)
C18 (RED)
C-22 (WHT)
C-22 (WHT)
K4
K5
A2
A1
B1
B2
(HCT-4213)
(HCT-4141)
6750W
HCT-4258
WHITE
RED
BLACK
RED
WHITE
BLACK
(1)
(2)
(3)
(4)
(5)
(6)

F1: 20 AMPS CLASS CC (100599)
F2: 20 AMPS CLASS CC (100599)

TURBOCHEF TECHNICAL SUPPORT
800–908–8726

SIGNATURE	DATE
DRAWN DAVE R	9/13/13
CHECKED CJD	9/13/13
APPROVED TW	9/13/13
PRODUCTION	
QA	

—	GENERAL	HCS
DASH NO	NEXT ASSY	USED ON
APPLICATION		

TURBOCHEF

TITLE
SCHEMATIC, HCS-1618
VFD DISPLAY,
3PH, 380/415 VAC, 50 HZ

SIZE	CODE IDENT NO	DRAWING NO
D		HCS–4131–1
SCALE NONE	KEY HCS-4131-1	

DISPLAY SIDE

NON-DISPLAY SIDE

NOTES:

COLOR CODE (LINE VOLTAGE)
BL - BLUE = LINE V (208/240)
BR - BROWN = LINE V (208/240)

COLOR CODE (LOW/CONTROL VOLTAGE)
BK - BLACK = 24 VDC COMMON
OR - ORANGE = STATUS INPUT
WH - WHITE = CONTROL OUTPUT
RD - RED = +24VDC

DWG NO HCS-4131-2 SH 1

REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
A	ECN 1308047 CJD INITIAL RELEASE CHECKED BY DR	09-10-13	TW

ALL WIRES TO BE (18-22) GA UL1213
TYPE E TEFLON (-65C TO 200C) (600 VOLTS)

BOTTOM BLOWER MOTOR AND CONTROL

BOTTOM BLOWER MOTOR (CCW)
M1RED
M2 BLACK
M3 WHITE
GREEN
(HCT-4205)
J5
240 VAC 3 PHASE OUT
BMSC (CON-7013)
J2
Analog Speed 0-10V — A-17 (RED)
I/O COMMON — B-6 (BLACK)
ENABLE — B-2 (WHITE)
I/O COMMON
STATUS OK — B-10 (ORANGE)
I/O COMMON
GND
180-240 VAC IN
BROWN
BLUE

(101211)
24VDC POWER SUPPLY
G V- V+ L N
C-8 (BLK)
C-19 (RED)

COOLING FAN
(100504)
OT 1 - 120°F (102086)
C NO
BROWN
BLUE

EMI FILTER 6VSK1 (100539)

TOP BLOWER MOTOR AND CONTROL

TOP BLOWER MOTOR (CCW)
(HCT-4205)
M1RED
M2 BLACK
M3 WHITE
GREEN
J5
240 VAC 3 PHASE OUT
BMSC (CON-7013)
J2
Analog Speed 0-10V — A-18 (RED)
I/O COMMON — A-5 (BLACK)
ENABLE — B-1 (WHITE)
I/O COMMON
STATUS OK — C-1 (ORANGE)
I/O COMMON
GND
180-240 VAC IN

KEYPAD
HHC-1234
J6
P6
P4
C-7 (BLK)
C-20 (WHT)
SPEAKER
(CON-7048)
SMART CARD READER (100506)
(ENC-1312)
SMART CARD CABLE
A - ANALOG
B - ADV I/O
C - STD I/O
J2-DISPLAY
(C0410)
(NGC-1530)
VFD DISPLAY
64 X 128 DOTS
(100505)

MAGNETIC SWITCH (HHB-3209)
RED (A-14)
BLACK (A-6)
ORANGE (C-10)
AU OPTION ONLY

CONVEYOR DIRECTION RELAY K7
(101279)
B-18 (RED)
C-13 (WHT)
A-14 (RED)
A-6 (BLK)
C-10 (ORG)
BLK
WHT
RED
(HHC-6670-2)

CONVEYOR BELT MOTOR AND CONTROL
(HHC-4120)
RED — A-16 (RED)
WHITE — B-8 (BLK)
YELLOW — B-23 (ORG)
WHITE
GRAY
BLACK

RTD
(HHC-6517-2)
A-9 (ORG)
A-8 (ORG)
A-7 (BLK)

M-6091
GREEN
E1

OT1 MANUAL RESET (102075)
L3 31 32 NC
L2 21 22 NC
L1 11 12 NC
RED
WHITE
BLACK

K6
(101279)
B-18 (RED)
C-13 (WHT)

K4 A2 A1
K5 B1 B2
(HCT-4213)
C18 (RED)
C18 (RED)
C-22 (WHT)
C-22 (WHT)

(HCT-4141)
6750W
HCT-4258
WHITE (5)
RED (6)
BLACK (4)
RED (3)
WHITE (2)
BLACK (1)

F1: 20 AMPS CLASS CC (100599)
F2: 20 AMPS CLASS CC (100599)

SIGNATURE	DATE
DRAWN DAVE R	9/13/13
CHECKED CJD	9/13/13
APPROVED TW	9/13/13
PRODUCTION	
QA	

TURBOCHEF

TITLE: SCHEMATIC, HCS-1618
VFD DISPLAY,
3PH, 230 VAC, 50/60 HZ

SIZE D | CODE IDENT NO | DRAWING NO HCS-4131-2
SCALE NONE | KEY HCS-4131-2

DASH NO	GENERAL	1618
	NEXT ASSY	USED ON
APPLICATION		

TURBOCHEF TECHNICAL SUPPORT
800-908-8726

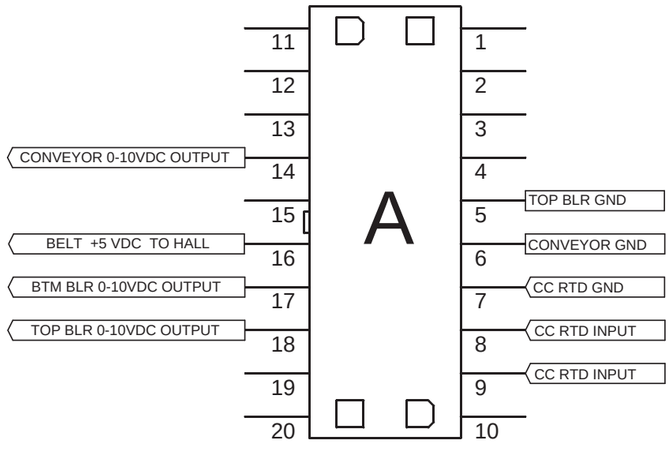
DWG NO HCS-4130/4131 | SH 1

RED - VDC OUTPUT
WHITE - CONTROL OUTPUT
BLACK - GROUND
ORANGE - STATUS INPUT

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	ECN 1308047 CJD INITIAL RELEASE CHECKED BY DR	09-10-13	TW

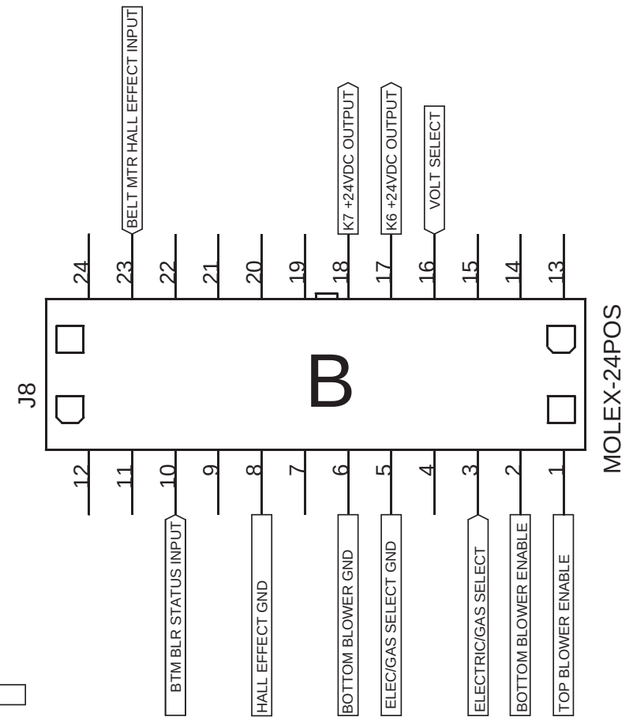
Analog I/0

MOLEX-20POS



J10

Mini-fit Jr. 39-28-8200



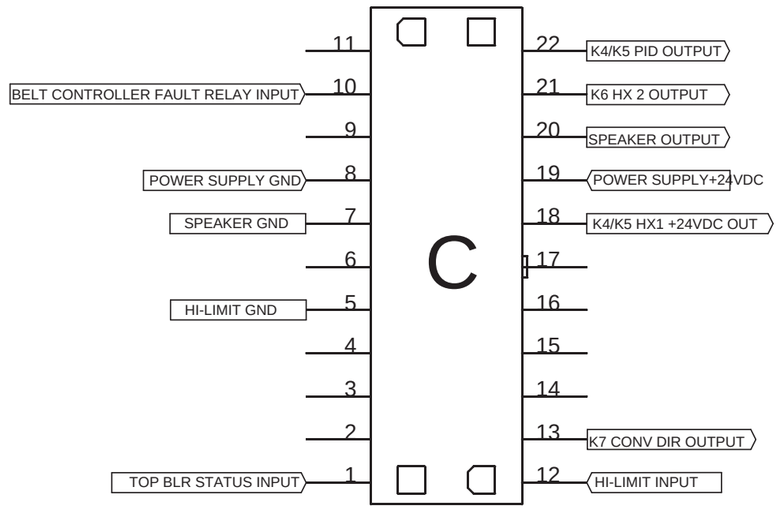
Advanced I/O

Mini-fit Jr. 39-28-8240

Standard I/O

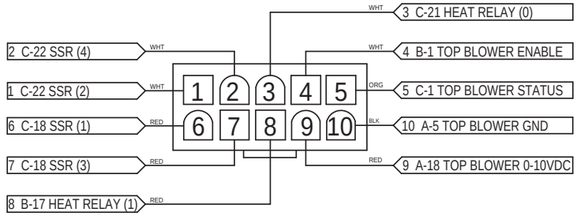
Pins 8 and 19 are the
24V Power Supply input

J9



MOLEX-22POS
Mini-fit Jr 39-28-8220

LOW VOLTAGE 10 PIN CONNECTION



SIGNATURE	DATE
DRAWN DAVE R	9/13/13
CHECKED CJD	9/13/13
APPROVED TW	9/13/13
PRODUCTION	
QA	

TURBOCHEF®

TITLE
SAGE BOARD PINOUTS, HCS-1618
VFD DISPLAY,
1PH, 208/240 VAC, 50/60 HZ

SIZE	CODE IDENT NO	DRAWING NO
D		HCS-4130/4131
SCALE NONE	KEY HCS-4130/4131	

DASH NO	NEXT ASSY	USED ON
—	GENERAL	HCS

APPLICATION

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Schematics - HhC 2020 and HhC 2620 Ovens

NOTES:

COLOR CODE (LINE VOLTAGE)
BL - BLUE = LINE V (208/240)
BR - BROWN = LINE V (208/240)

COLOR CODE (LOW/CONTROL VOLTAGE)
BK - BLACK = 24 VDC COMMON
OR - ORANGE = STATUS INPUT
WH - WHITE = CONTROL OUTPUT
RD - RED = +24VDC

DWG NO	HCT–4130	SH 1

REVISIONS

LTR	DESCRIPTION	DATE	APPROVED
H	ECN 1109019 CJD 1. ADDED C-9 TO FRONT CONV. I/O. 2. ADDED C-10 TO REAR CONV. I/O. 3. ADDED RELAY TO RIC-COM I/O. 2X	09-19-11	DR

RELAY PINOUT

KEYPAD HHC-1234 — J6 / P6 — P4

SMART CARD CONNECTOR (100506)
(103023) CABLE, SMART CARD

A - ANALOG
B - ADV I/O
C - STD I/O

J2-DISPLAY

(100193)
(100184)

VFD DISPLAY 64 X 128 DOTS (100505)

RTD (102088)
A-9
A-8
A-7

SPEAKER (104155)
C7 C20

MAGNETIC SWITCH (HHB-3209)
RED (A-14, C-6)
BLACK (A-8, A-13)
AU OPTION ONLY

FRONT CONVEYOR MOTOR AND CONTROL (LEFT)
SEE AU OPTION
(100448 ALTIVAR)
C6 (RED)
C13 (BLK)
C3 (ORNG)
RED — A-16 (RED)
WHITE — B-7 (BLK)
YELLOW — B-22 (ORG)
(100877)
WHITE
GRAY
BLACK

REAR CONVEYOR MOTOR AND CONTROL (RIGHT)
SEE AU OPTION
(100448 ALTIVAR)
C14 (RED)
C8 (BLK)
C10 (ORNG)
RED — A-16 (RED)
WHITE — B-3 (BLK)
YELLOW — B-23 (ORG)
(100877)
WHITE
GRAY
BLACK

(101279)
B-18 (RED)
C-13 (WHT)
K7

(101211)
24VDC POWER SUPPLY
G V- V+ L N
C-8 (BLK)
C-19 (RED)

VOLTAGE MODULE (100783)
B 16
A 5

(LEFT) COOLING FANS (RIGHT)
(100085)

OT 1 - 120°F (102086)
OT 1 - 120°F (102086)
HCT-4086-12

EMI FILTER 6VSK1 (100539)
EMI FILTER 6VSK1 (100539)

OT1 MANUAL RESET (100516)
L3 C 31 NC 32
L2 C 21 NC 22
L1 C 11 NC 12

BLWR MTR BTM (CCW)
M1RED
M2 BLACK
M3 WHITE
GREEN
(HCT-4205)

J5
1 240 VAC 3 PHASE OUT
2
3
4
1 180-240 VAC IN
2
3

BMSC (100443)
J2
Analog Speed 0-10V 1 A-17 (RED)
I/O COMMON 2 B-6 (BLACK)
ENABLE 3 B-2 (WHITE)
I/O COM 4
STATUS OK 5 B-10 (ORANGE)
I/O COMMON 6 GND

BLWR MTR TOP (CCW)
M1RED
M2 BLACK
M3 WHITE
GREEN
(HCT-4205)

J5
1 240 VAC 3 PHASE OUT
2
3
4
1 180-240 VAC IN
2
3

BMSC (100443)
J2
Analog Speed 0-10V 1 A-18 (RED)
I/O COMMON 2 A-5 (BLACK)
ENABLE 3 B-1 (WHITE)
I/O COM 4
STATUS OK 5 C-1 (ORANGE)
I/O COMMON 6 GND

B-17 (RED)
C-21 (WHT)
K6
(101279)

C18 (RED)
K4 A2 A1
K5 B1 B2
(HCT-4213)
C-22 (WHT)
C-22 (WHT)

L3 L2 L1 L3 L2 L1
(HCT-4141)

6750W TOP HCT-4258
6750W BOTTOM HCT-4258

BR BL
F1 F2
E1

F1: 20 AMPS CLASS CC (100599)
F2: 20 AMPS CLASS CC (100599)

TURBOCHEF TECHNICAL SUPPORT
800–908–8726

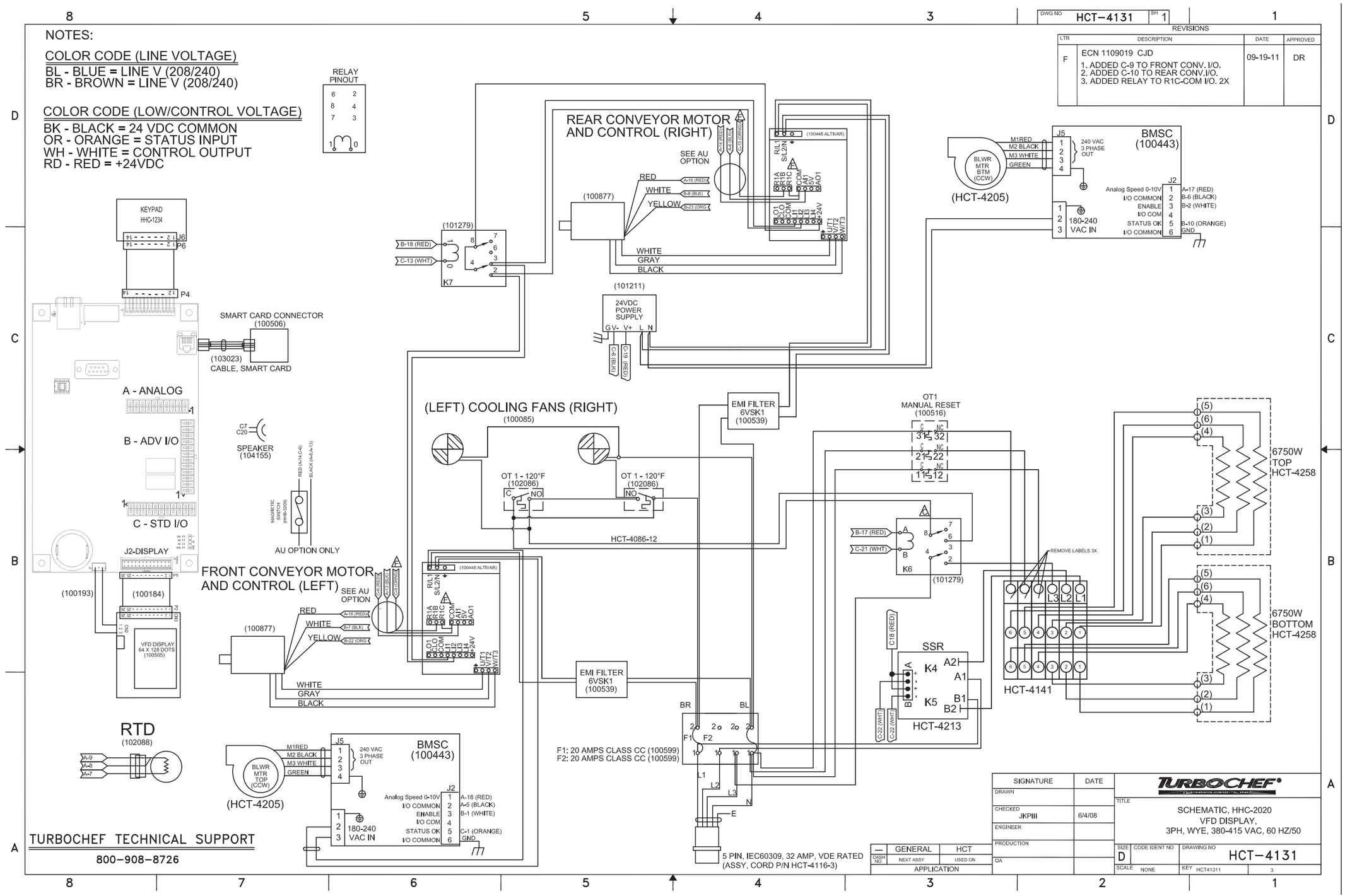
SIGNATURE	DATE
DRAWN	
CHECKED JKPIII	6/4/08
ENGINEER	
PRODUCTION	
QA	

TURBOCHEF TECHNOLOGY, INC.

TITLE
SCHEMATIC, HHC-2020
VFD DISPLAY,
3PH, DELTA, 208/240 VAC, 60 HZ/50

SIZE	CODE IDENT NO	DRAWING NO
D		HCT–4130
SCALE NONE	KEY HCT41301	3

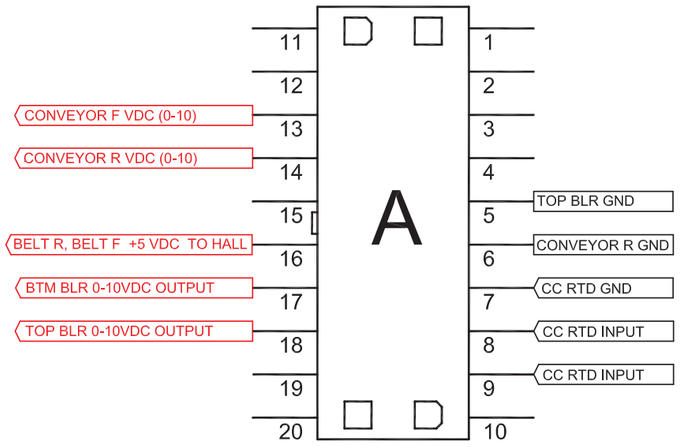
DASH NO	GENERAL NEXT ASSY	HCT USED ON
APPLICATION		


NOTES:
COLOR CODE (LINE VOLTAGE)
BL - BLUE = LINE V (208/240)
BR - BROWN = LINE V (208/240)
COLOR CODE (LOW/CONTROL VOLTAGE)
BK - BLACK = 24 VDC COMMON
OR - ORANGE = STATUS INPUT
WH - WHITE = CONTROL OUTPUT
RD - RED = +24VDC
RELAY PINOUT
DWG NO HCT-4131 SH 1
REVISIONS
LTR DESCRIPTION DATE APPROVED
F ECN 1109019 CJD
1. ADDED C-9 TO FRONT CONV. I/O.
2. ADDED C-10 TO REAR CONV.I/O.
3. ADDED RELAY TO R1C-COM I/O. 2X
09-19-11 DR
KEYPAD HHC-1234
SMART CARD CONNECTOR (100506)
(103023) CABLE, SMART CARD
A - ANALOG
B - ADV I/O
C - STD I/O
J2-DISPLAY
(100193)
(100184)
VFD DISPLAY 64 X 128 DOTS (100505)
RTD (102088)
SPEAKER (104155)
AU OPTION ONLY
REAR CONVEYOR MOTOR AND CONTROL (RIGHT)
SEE AU OPTION
(100877)
(101279)
(101211)
24VDC POWER SUPPLY
(100448 ALTIVAR)
FRONT CONVEYOR MOTOR AND CONTROL (LEFT)
(LEFT) COOLING FANS (RIGHT)
(100085)
OT 1 - 120°F (102086)
HCT-4086-12
EMI FILTER 6VSK1 (100539)
OT1 MANUAL RESET (100516)
BLWR MTR TOP (CCW)
(HCT-4205)
BLWR MTR BTM (CCW)
BMSC (100443)
240 VAC 3 PHASE OUT
180-240 VAC IN
Analog Speed 0-10V
I/O COMMON
ENABLE
I/O COM
STATUS OK
SSR
HCT-4213
HCT-4141
6750W TOP HCT-4258
6750W BOTTOM HCT-4258
REMOVE LABELS 3X
F1: 20 AMPS CLASS CC (100599)
F2: 20 AMPS CLASS CC (100599)
5 PIN, IEC60309, 32 AMP, VDE RATED (ASSY, CORD P/N HCT-4116-3)
TURBOCHEF TECHNICAL SUPPORT
800-908-8726
SIGNATURE DATE
DRAWN
CHECKED JKPIII 6/4/08
ENGINEER
PRODUCTION
QA
TURBOCHEF
TITLE
SCHEMATIC, HHC-2020
VFD DISPLAY,
3PH, WYE, 380-415 VAC, 60 HZ/50
SIZE D CODE IDENT NO DRAWING NO HCT-4131
SCALE NONE KEY HCT41311 3
DASH NO — GENERAL HCT
NEXT ASSY USED ON
APPLICATION

RED - VDC OUTPUT
WHITE - CONTROL OUTPUT
BLACK - GROUND
ORANGE - STATUS OUTPUT

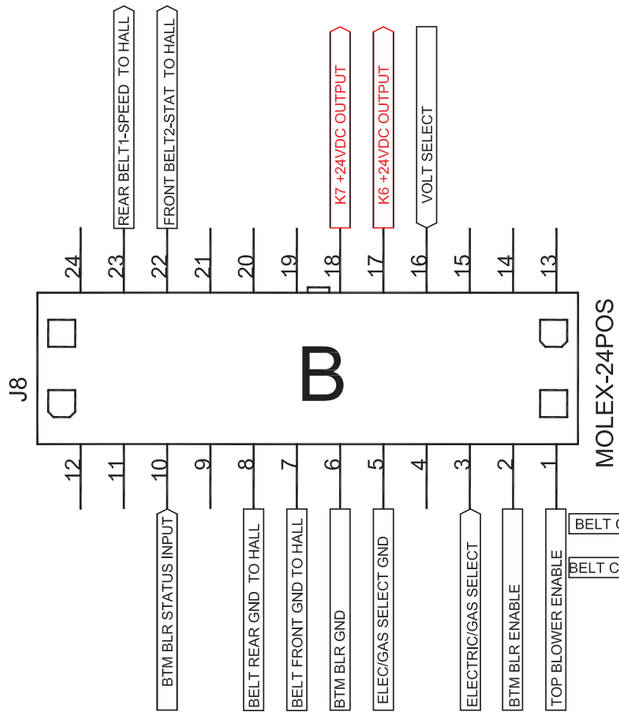
Analog I/0

MOLEX-20POS



J10

Mini-fit Jr. 39-28-8200



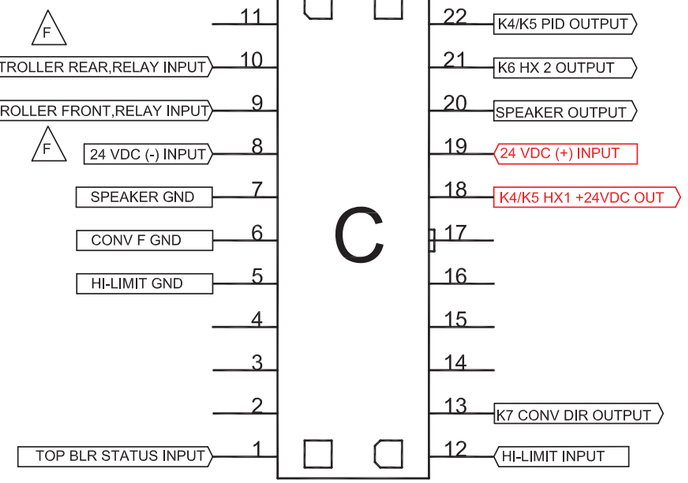
Advanced I/O

Mini-fit Jr. 39-28-8240

Standard I/O

Pins 8 and 19 are the
24V Power Supply input

J9



MOLEX-22POS

Mini-fit Jr 39-28-8220

Title	HHC-2020 I/O CONTROL PINOUTS	
Size	Number HCT-4131	Rev F
Date JUNE 16, 2008		Drawn by MJP/JKP
Filename		Sheet 2 of 3

Control Techniques: Commander SL (EMERSON)

Conveyor Motor - BGFM12-240TD2NX (SMALL FRAME)
Dual or Single Conveyor (-2 VERSON)

Password: "0" (Stock password, should change in Production)

Pram	Setting	Note
01	0.0	Minimum set speed in Hz
02	120	Maximum set speed in Hz
03	0.0	Accelleration rate (in sec/100Hz)
04	0.0	Decelleration rate (in sec/100Hz)
05	AV	Drive confguration
06	0.15	Motor rated current
07	1610	Motor rated speed (Note: RPM of motor - not output)
08	208	Motor rated voltage
09	0..63	Motor power factor
10	OPEn	Parameter access
11	0	Start/Stop logic
15	0.0	Jog referance
17	OFF	Enable negative prreset speeds
18	0.0	Preset Speed 1
19	0.0	Preset Speed 2
20	0.0	Preset Speed 3
21	0.0	Preset Speed 4
25	0	Securty Setup
27	0	Power up keypad referance
29	no Load defaults	
30	1	Ramp mode select
31	2	Stopping mode select
32	OFF	Dynamic V to f select
33	2	Catch a spinning motor select
35	n=0	Terminal T4 output mode select
37	3	Maximum switching freq (in kHz)
39	60.0	Motor rated frequency
40	Auto	Number of motor poles
41	Fd	Voltage mode select
42	3.0	Low frequency voltage boost

The rest are read only

Control techniques: Altivar 12

Conveyor motor - BGFM12-240TD2NX (SMALL FRAME)
Dual or Sengle Conveyor (-2 VERSON)

Code	Long Label	Current Value
AC2	Acceleration 2 ramp time	0 s
AC2	Acceleration 2 ramp time	0 s
ACC	Acceleration ramp time	0 s
AI1T	Configuration of AI1	Voltage
AO1T	Configuration of AO1	Voltage
ATR	Automatic restart	Yes
BFR	Std. motor frequency	60Hz NEMA
CFG	Macro config selection	Speed cfg
COS	Motor 1 Cosinus Phi	0.63
CTD	Motor current detection	0.2 A
DEC	Deceleration ramp time	0 s
FLR	Catch a spinning load	Yes
FRS	Nominal motor frequency	60 Hz
FTD	Motor freq. threshold	60 Hz
HSP	High Speed	120 Hz
ITH	Motor thermal current	0.3 A
MPC	Motor parameter choice	Mot Cos
NCR	Nominal motor current	0.3 A
NPR	Rated motor power	0.2
NSP	Nominal motor speed	1610 rpm
RRS	Reverse input assignment	LI2 high
STP	Ctrld stop on power loss	Ramp stop
TAR	Max. restart duration	10 minutes
TCT	Type of 2 wire control	Level
TFR	Max. output frequency	120 Hz
UNS	Nominal motor voltage	208 V

The rest are read only

Title	HHC-2020 I/O CONTROL PINOUTS		
Size	Number HCT-4131		Rev F
Date	JUNE 16, 2008	Drawn by	MJP/JKP
Filename		Sheet 3 of 3	

Appendix A - Replacing HhC 1618 Oven Components

Replacing Oven Components

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

Part Details...			Locate the Part Here...		
Item	Part Number	Qty. Per Oven	Outside of End Bells (Page A-4)	Left End Bell (Page A-6)	Right End Bell (Page A-8)
Air Filter	HCT-4067	2	✔		
Back Panel, Display	HCS-4079	1	✔		
Back Panel, Tail	HCS-4105	1	✔		
Blower Motor Assembly - North and South America	HCT-3022	2		✔	✔
Blower Motor Assembly - Europe/Asia-Pacific	HCT-3022-2	2		✔	✔
Blower Motor Controller	CON-7013	2		✔	✔
Cable, Display, Power, 2-Pin	C0410	1			✔
Cable, Display, Ribbon	NGC-1530	1			✔
Cable, Smart Card Reader	ENC-1312	1			✔
Chain, Conveyor (for 36" Conveyor)	HCS-4351	1	✔		
Chain, Conveyor (for 48" Conveyor)	HCS-4352	1	✔		
Chainguard (for 36" Conveyor)	HCS-4327	1	✔		
Chainguard (for 48" Conveyor)	HCS-4328	1	✔		
Channel	HCS-4076	1	✔		
Control Board	CON-3018-X*	1			✔
Conveyor Controller	100448	1			✔
Conveyor Motor	HHC-4120	1			✔
Conveyor, 36"	HCS-3003	1	✔		
Conveyor, 48"	HCS-3004	1	✔		
Cooling Fan	100574	2	✔		
Crumb Tray (for 36" Conveyor)	HCS-4353	2	✔		
Crumb Tray (for 48" Conveyor)	HCS-4281	2	✔		
Duct, Display	HCS-4374	1	✔		
Duct, Tail	HCS-4375	1	✔		
Display, VFD	NGC-3023	1			✔
Distribution Block	HCT-4141	1		✔	
EMI Filter	100539	2		✔	✔
Eyelid	HCS-4028	2	✔		
Finger Guard	100086	2	✔		
Fuse, 20 Amp, Class CC	100599	2		✔	
Fuse Block	103548	2		✔	
Hatch	HCS-3011	1	✔		
Hatch Latch	100777	2	✔		
Heater	HCS-3010	1	✔		

* See Service Parts Price List for details.

Master list continued on page A-2.

Part Details...			Locate the Part Here...		
Item	Part Number	Qty. Per Oven	Outside of End Bells (Page A-4)	Left End Bell (Page A-6)	Right End Bell (Page A-8)
Heater Bracket	HCS-4122	1	✔		
Heater Cover	HCS-4032	1	✔		
Jetplate	HCS-4099	2	✔		
Keypad	HHC-1234	1	✔		
Leg	HHB-3205	4	✔		
Plenum	HCS-4020	2	✔		
Power Cord	Contact Factory	1		✔	
Power Cord Retainer	I5-9211	2	✔		
Power Supply	101211	1			✔
Power Supply Bracket	HCT-4103	1			✔
Relay, Mechanical, K6	101279	1		✔	
Relay, Mechanical, K7	101279	1			✔
Relay, Solid State, K4/K5	HCT-4213	1		✔	
RTD	HHC-6517-2	1			✔
Shelf Tray (Crumb Tray Extension), 6"	HCS-4050	2	✔		
Smart Card Reader	100506	1			✔
Speaker	CON-7048	1			✔
Support, Top Plenum	HCT-4169	1	✔		
Thermostat, Cooling Fan	102086	2		✔	✔
Thermostat, High Limit	102075	1		✔	
Voltage Sensor	100783	1			✔
Wire Harness, Fan Jumper	HCT-4086-12	1			
Wire Harness, Ground Wire, 24" W/ #10, .25" Lugs	HCT-4086-11	2			
Wire Harness, Line Voltage, Display PS, BMSC and CMSC	HCS-4086-2	1			
Wire Harness, Line Voltage, Jumper, Black, Single Phase	HCS-4086-5	1			
Wire Harness, Line Voltage, Limit to Distribution Block (Black, White, and Red), 3 Phase Delta Only	HCS-4086-6	1			
Wire Harness, Line Voltage, Limit to Distribution Block (Blue), Single Phase Domestic / 3 Phase Wye	HCS-4086-3	1			
Wire Harness, Line Voltage, Main	HCS-4086-1	1			
Wire Harness, Line Voltage, SSR to Distribution Block (Black, White, and Red)	HCS-4086-4	1			
Wire Harness, Low Voltage, CMSC Direction	HCS-4163-2	1			
Wire Harness, Low Voltage, Main	HCS-4163-1	1			

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Replacing Items - Outside of End Bells

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

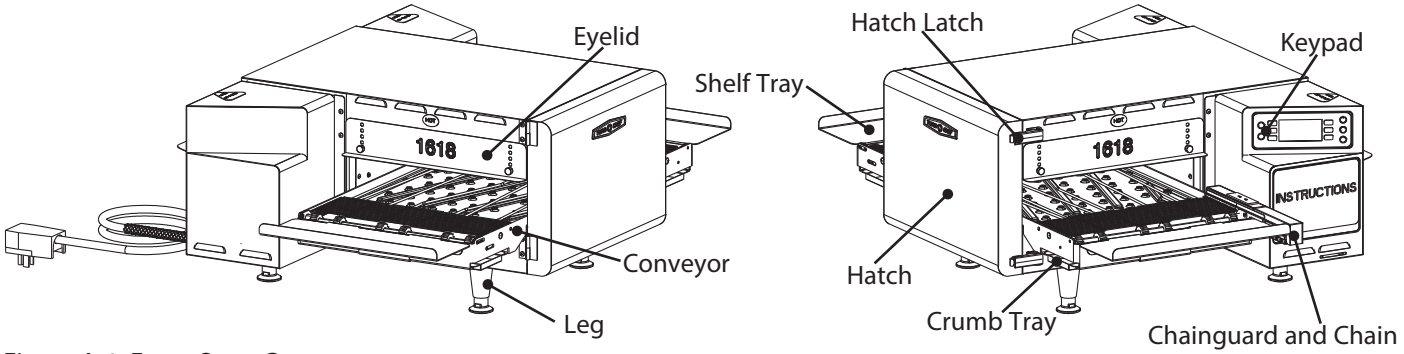

Figure A-1: Front Oven Components

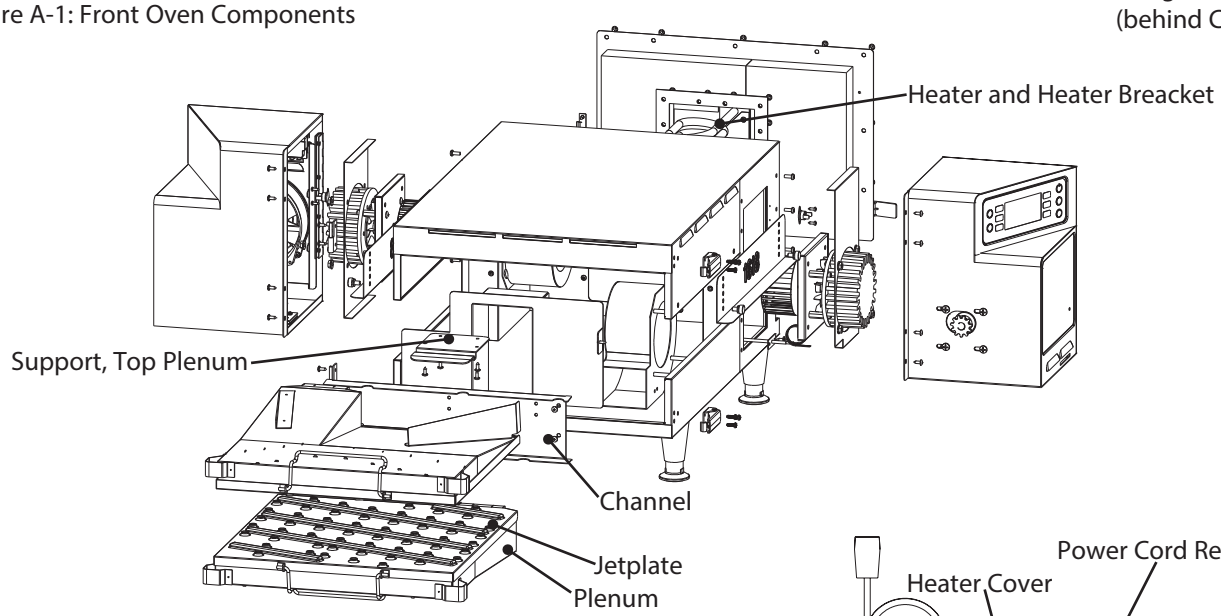

Figure A-2: Inner Oven Components

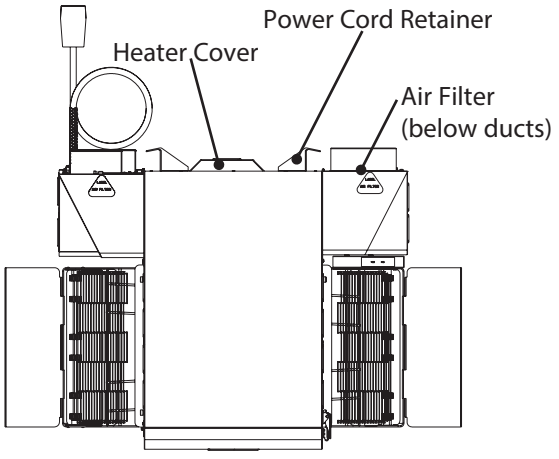

Figure A-3: Rear Oven Components

Item	Part Number	Hardware Description	Hardware Part Number(s)
Air Filter	HCT-4067 (x2)	None	None
Back Panel, Display	HCS-4079	Screw, #10-32 x .5, PPH, INT Tooth, SS	101460 (x2)
Back Panel, Tail	HCS-4105	Screw, #10-32 x .5, PPH, INT Tooth, SS	101460 (x2)
Chain, Conveyor (for 36" Conveyor)	HCS-4351	None	None
Chain, Conveyor (for 48" Conveyor)	HCS-4352	None	None
Chainguard (for 36" Conveyor)	HCS-4327	None	None
Chainguard (for 48" Conveyor)	HCS-4328	None	None
Channel	HCS-4076	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)
Conveyor (for 36" Conveyor)	HCS-3003	None	None
Conveyor (for 48" Conveyor)	HCS-3004	None	None
Cooling Fan	100574 (x2)	Nut, KEPS Hex, #6-32, EXT Tooth, CRES	102961 (x2) each
Crumb Tray (for 36" Conveyor)	HCS-4353 (x2)	None	None
Crumb Tray (for 48" Conveyor)	HCS-4281 (x2)	None	None
Duct, Display	HCS-4374	None	None
Duct, Tail	HCS-4375	None	None
Eyelid	HCS-4028 (x2)	Screw, Thumb w/W HD, #1/4-20x3/8", SS	101772 (x2) each
Finger Guard	100086 (x2)	None	None
Hatch	HCS-3011	None	None
Hatch Latch	100777 (x2)	Screw, 8-32 x .50IG, ph, COMB, SS	101723 (x3) each
Heater	HCS-3010	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x8)
Heater Bracket	HCS-4122	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x14)
Heater Cover	HCS-4032	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x14)
Jetplate	HCS-4099 (x2)	None	None
Keypad	HHC-1234	None	None
Leg	HHB-3205 (x4)	None	None
Plenum	HCS-4020 (x2)	None	None
Power Cord Retainer	I5-9211 (x2)	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x2) each
Shelf Tray (Crumb Tray Extension), 6"	HCS-4050 (x2)	None	None
Support, Top Plenum	HCT-4169	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)

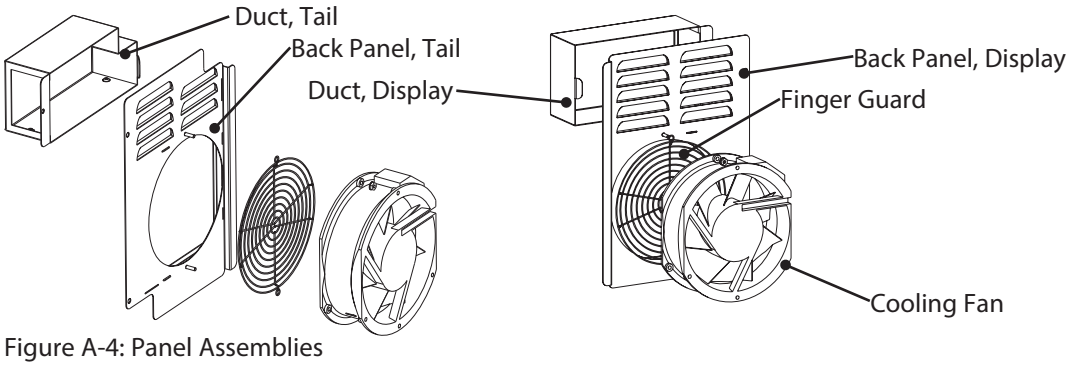

Figure A-4: Panel Assemblies

Replacing Items - Left End Bell

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

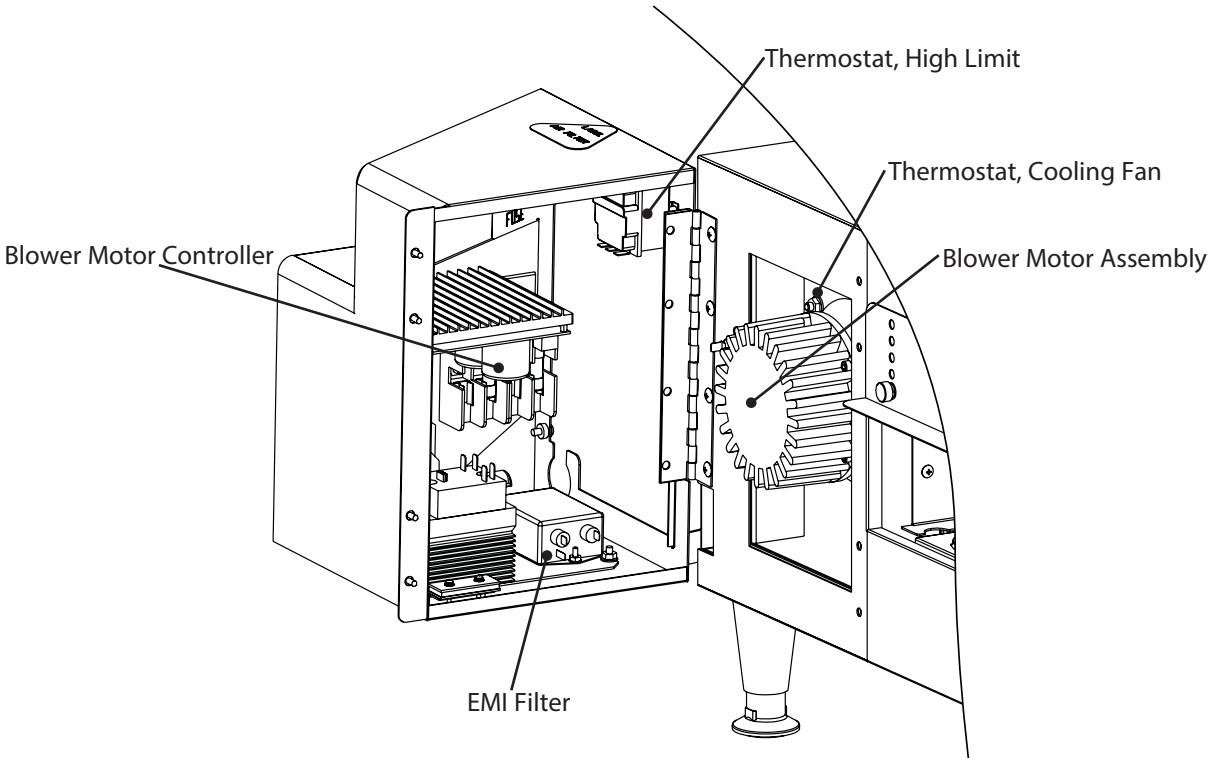

Figure A-5: Left End Bell Components, Left End Bell Open

Item	Part Number	Hardware Description	Hardware Part Number(s)
Blower Motor Assembly - North and South America*	HCT-3022	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Assembly - Europe/Asia-Pacific*	HCT-3022-2	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Controller*	CON-7013	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Distribution Block	HCT-4141	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
EMI Filter*	100539	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Fuse Block	103548	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Fuse, 20 Amp, Class CC	100599 (x2)	None	None
Power Cord	Contact Factory	None	None
Relay, Mechanical, K6	101279	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Relay, Solid State, K4/K5	HCT-4213	Screw, #8 x 3/8 PH MOD TRUSS CRES	101682 (x2)
Thermostat, Cooling Fan*	102086	Screw, #6 x 1/2, PPHD, DRL-PT, SS	101687 (X2)
Thermostat, High Limit	102075	Screw, M4 x 0.7 x 8, pphd, INT TOOTH, SS	101672 (X)

* These items are included in both the right and left endbells.

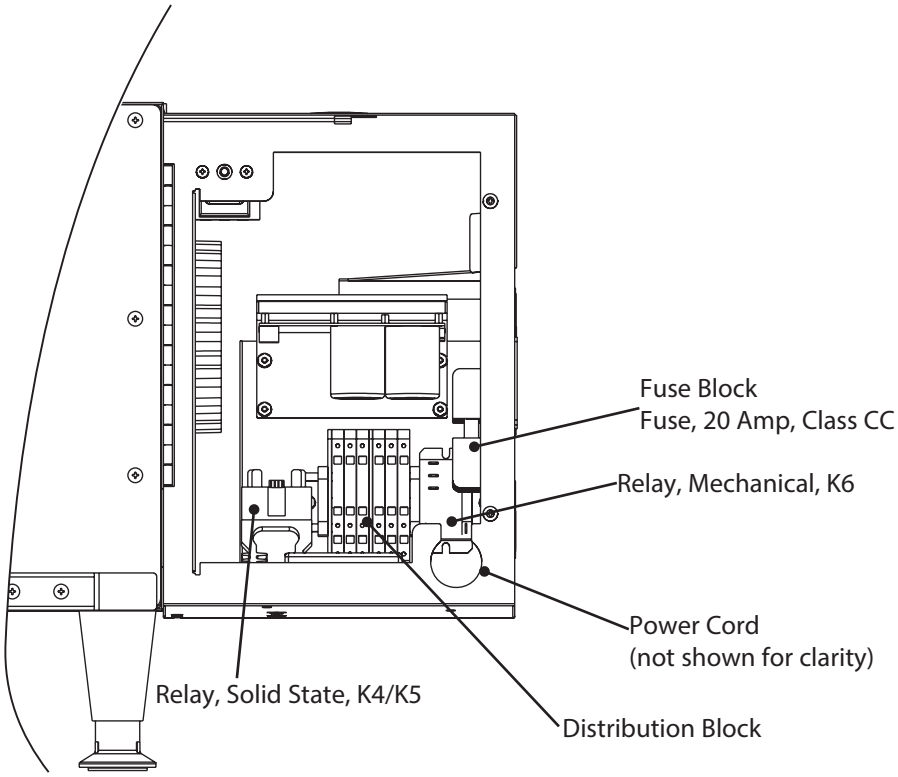

Figure A-6: Left End Bell Components, Back Panel Removed

Replacing Items - Right End Bell

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

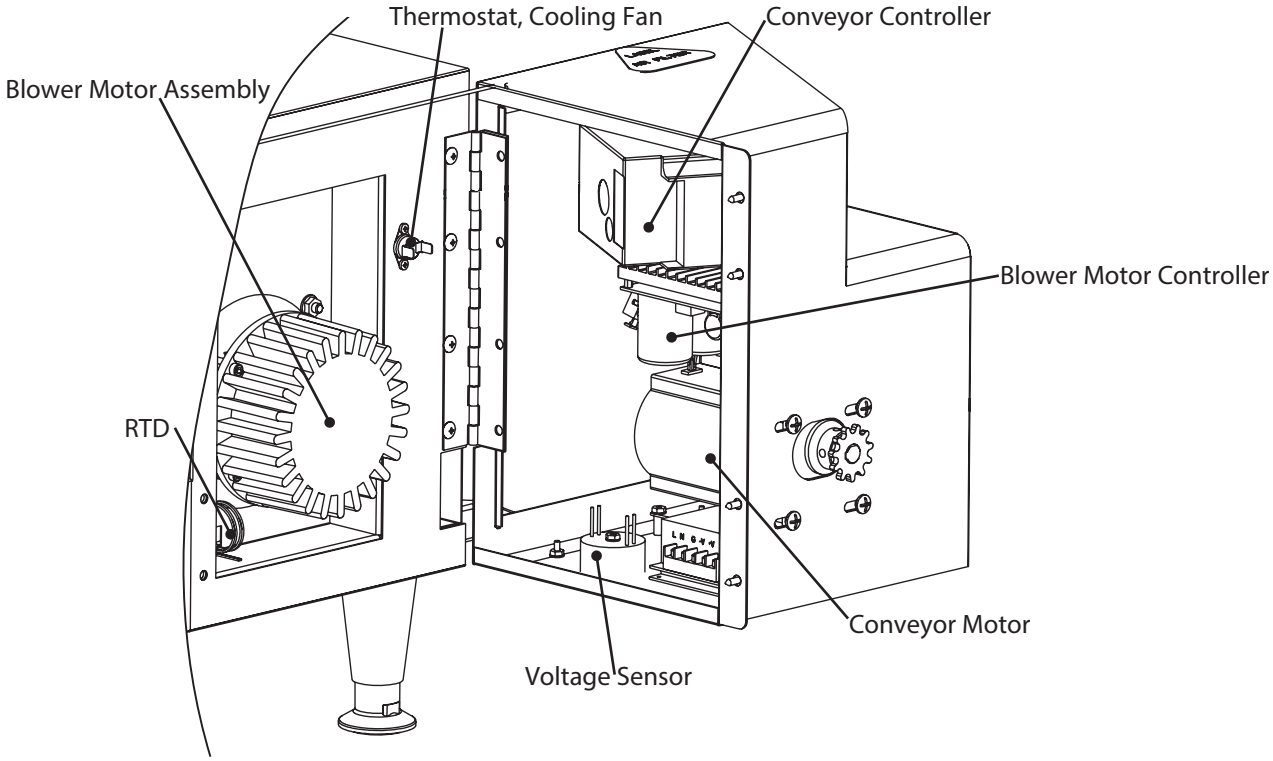

Figure A-7: Right End Bell Components, Right End Bell Open

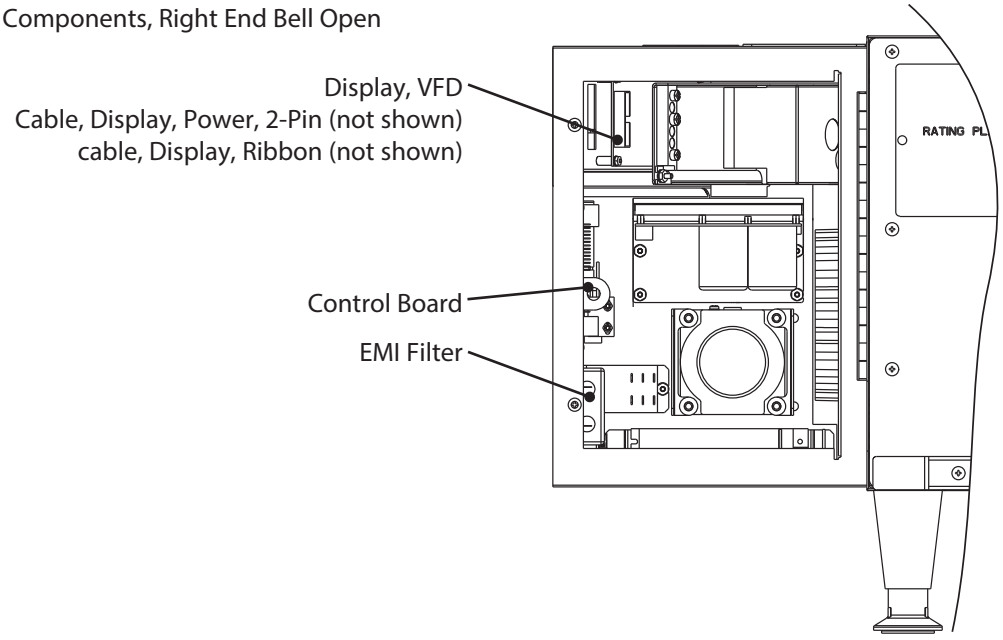

Figure A-8: Right End Bell Components, Back Panel Removed

Item	Part Number	Hardware Description	Hardware Part Number(s)
Blower Motor Assembly - North and South America*	HCT-3022	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x l, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Assembly - Europe/Asia-Pacific*	HCT-3022-2	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x l, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Controller*	CON-7013	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Cable, Display, Power, 2-Pin	C0410	None	None
Cable, Display, Ribbon	NGC-1530	None	None
Cable, Smart Card Reader	ENC-1312	None	None
Control Board	CON-3018-X**	Nut, KEPS HEX, #6-32, EXT Tooth, CRES Spacer, #4 x .25 ODX 3/8 lG, THRU Round	102961 (x4) 101869 (x4)
Conveyor Controller	100448	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Conveyor Motor	HHC-4120	Nut Plate, 1/4-20 Screw, 1/4-20 x 3/4 Lg, PHTRHD, SS Sprocket, Chain 035 .5" Bore 10 T	HCT-4107 (x2) 101399 (x4) 103562
Display, VFD	NGC-3023	Nut, KEPS HEX, #4-40 EXT Tooth Standoff, Round, .12 ID, .25 OD x .50 long	102960 (x4) 101954 (x4)
EMI Filter*	100539	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Power Supply	101211	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Power Supply Bracket	HCT-4103	Screw, M3 x 8mm long, PPHD, SS	101668 (x3)
Relay, Mechanical, K7	101279	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
RTD	HHC-6517-2	Screw, #8 x 1/2 Phillips, MOD TRUSS, TEK, SS	101698
Smart Card Reader	100506	Nut, KEPS HEX, #6-32, EXT Tooth, CRES Stand-Off, RND, .12 id, .25 od x .50 Lg	102961 (x4) 101954 (x4)
Speaker	CON-7048	Nut 4-40 HEX, Nylock, SS	101060 (x4)
Thermostat, Cooling Fan*	102086	Screw, #6 x 1/2, PPHD, DRL-PT, SS	101687 (x2)
Voltage Sensor	100783	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961

* These items are included in both the right and left endbells.
** See Service Parts Price List for details.

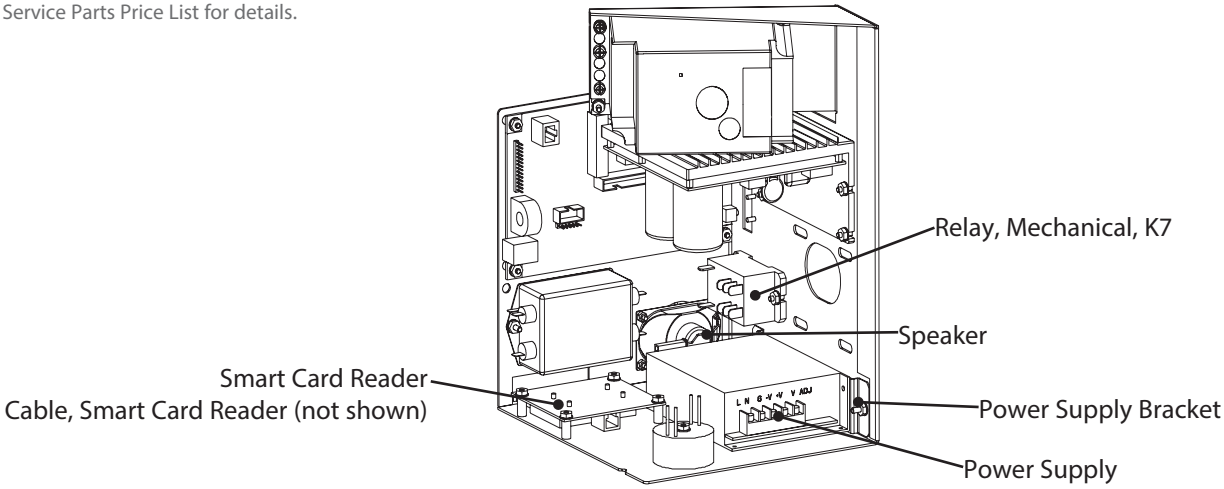

Figure A-9: Right End Bell Components, Electronics Tray Removed

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Appendix B - Replacing HhC 2020 Oven Components

Replacing Oven Components

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

Part Details...			Locate the Part Here...		
Item	Part Number	Qty. Per Oven	Outside of End Bells (Page B-4)	Left End Bell (Page B-6)	Right End Bell (Page B-8)
Air Filter	HCT-4067	2	✔		
Back Panel, Display	HCT-4079	1	✔		
Back Panel, Tail	HCT-4105	1	✔		
Blower Motor Assembly - North and South America	HCT-3022	2		✔	✔
Blower Motor Assembly - Europe/Asia-Pacific	HCT-3022-2	2		✔	✔
Blower Motor Controller	CON-7013	2		✔	✔
Cable, Display, Power, 2-Pin	C0410	1			✔
Cable, Display, Ribbon	NGC-1530	1			✔
Cable, Smart Card Reader	100182	1			✔
Chain, Conveyor	HCT-4143	2*	✔		
Chainguard, Left (Split-belt config only)	HCT-4038	1*	✔		
Chainguard, Right	HCT-4041	1	✔		
Channel	HCT-4076	1	✔		
Control Board	CON-3012-X**	1			✔
Conveyor Controller	HHC-6670-2	2*		✔	✔
Conveyor Motor	HCT-4120	2*		✔	✔
Conveyor (Single Belt)	HCT-3009	1	✔		
Conveyor (Split Belt 50/50)	HCT-3010	1	✔		
Conveyor (Split Belt 70/30)	HCT-3011	1	✔		
Cooling Fan	TC3-0433	2	✔		
Crumb Tray	HCT-4045	2	✔		
Display, VFD	NGC-3023	1			✔
Distribution Block	HCT-4141	1		✔	
EMI Filter	100539	2		✔	✔
Eyelid	HCT-4028	2	✔		
Finger Guard	100086	2	✔		
Fuse, 20 Amp, Class CC	100599	2		✔	
Fuse Block	103548	1		✔	
Gear Motor Cover (Single-belt config only)	HCT-4142	1*	✔		
Hanger	HCT-4148	1	✔		
Hatch, with Logo	HCT-3017-2	1	✔		
Hatch, without Logo	HCT-3017-4	1	✔		
Hatch Latch	100777	2	✔		
Heater	HCS-3009	2	✔		

* Quantities will differ depending on conveyor type.
** See Service Parts Price List for details.

Master list continued on page B-2.

Part Details...			Locate the Part Here...		
Item	Part Number	Qty. Per Oven	Outside of End Bells (Page B-4)	Left End Bell (Page B-6)	Right End Bell (Page B-8)
Heater Cover	HCT-4032	1	✔		
Jetplate	HCT-4099	2	✔		
Keypad	HHC-1234	1	✔		
Leg	HHB-3205	4	✔		
Plenum	HCT-4020	2	✔		
Power Cord	Contact Factory	1		✔	
Power Cord Retainer	I5-9211	2	✔		
Power Supply	101211	1			✔
Power Supply Bracket	HCT-4103	1			✔
Relay, Mechanical, K6	101279	1		✔	
Relay, Mechanical, K7	101279	1			✔
Relay, Solid State, K4/K5	HCT-4213	1		✔	
RTD	HHC-6517-2	1			✔
Shelf Tray (Crumb Tray Extension)	HCT-4050	2	✔		
Smart Card Reader	100506	1			✔
Speaker	CON-3003	1			✔
Support, Top Plenum	HCT-4169	1	✔		
Thermostat, Cooling Fan	102086	2		✔	✔
Thermostat, High Limit	102075	1		✔	
Voltage Sensor	100783	1			✔
Wire Harness, EMI to Fan Control, Conveyor Control	HCT-4086-7	1			
Wire Harness, EMI to Fan Control, Power Supply, Conveyor Control	HCT-4086-5	1			
Wire Harness, Fuse Block to EMI	HCT-4086-6	1			
Wire Harness, Fuse Block to High Limit	HCT-4086-3	1			
Wire Harness, Fuse Block to SSR, 4" LG	HCT-4086-9	1			
Wire Harness, Fuse Block to SSR, 4.25" LG	HCT-4086-8	1			
Wire Harness, High Limit to Distribution Block	HCT-4086-4	1			
Wire Harness, High Voltage, Main	HCT-4086-1	1			
Wire Harness, LOV	HCT-4163-1	1			
Wire Harness, SSR to Distribution Block	HCT-4086-2	1			

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Replacing Items - Outside of End Bells

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

NOTE: Only single-belt ovens will have the *Gear Motor Cover*. Dual-belt ovens will have the *Chainguard, Left*.

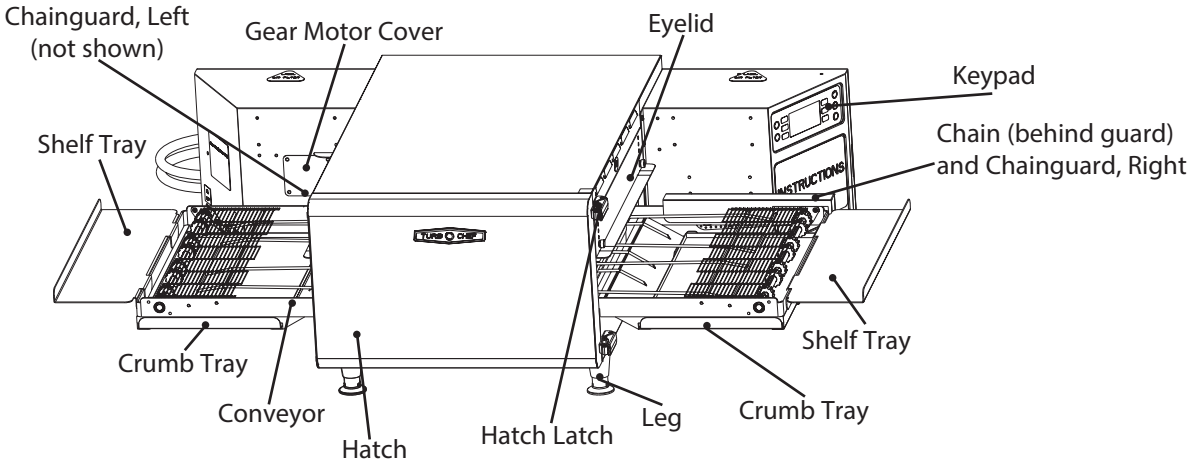

Figure B-1: Front Oven Components

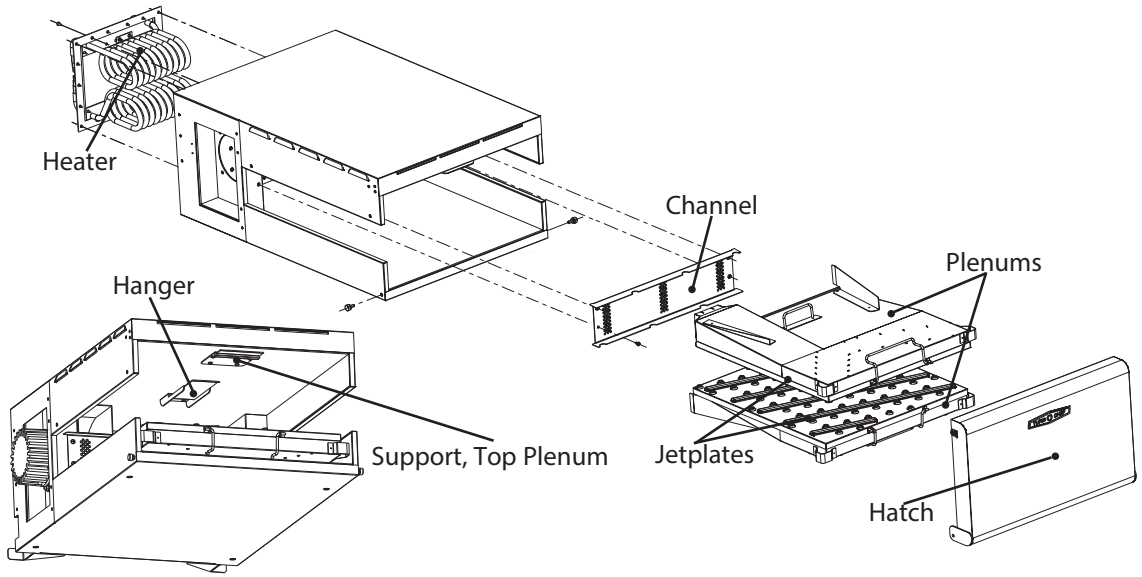

Figure B-2: Inner Oven Components

NOTE: If replacing round heaters (not pictured above), HCT-3016 must be used.

Item	Part Number	Hardware Description	Hardware Part Number(s)
Air Filter	HCT-4067 (x2)	None	None
Back Panel, Display	HCT-4079	Screw, #10-32 x .5, PPH, INT Tooth, SS	101460 (x2)
Back Panel, Tail	HCT-4105	Screw, #10-32 x .5, PPH, INT Tooth, SS	101460 (x2)
Chain, Conveyor	HCT-4143	None	None
Chainguard, Left	HCT-4038	None	None
Chainguard, Right	HCT-4041	None	None
Channel	HCT-4076	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)
Conveyor, Single	HCT-3009	Chain, #35, 52 Links, With Master Link, Endless	HCT-4143
Conveyor, Split Belt 50/50	HCT-3010	Chain, #35, 52 Links, With Master Link, Endless	HCT-4143 (x2)
Conveyor, Split Belt 70/30	HCT-3011	Chain, #35, 52 Links, With Master Link, Endless	HCT-4143 (x2)
Cooling Fan	TC3-0433 (x2)	Nut, KEPS Hex, #6-32, EXT Tooth, CRES Screw, SH MTL, #8 x 1/2 Serrated PHTRH	102961 (x4) 101688 (x4)
Crumb Tray	HCT-4045 (x2)	None	None
Eyelid	HCT-4028 (x2)	Screw, Thumb w/W HD, #1/4-20x1/2", SS	101752 (x2)
Finger Guard	100086 (x2)	None	None
Gear Motor Cover	HCT-4142	Nut, #10-32, SERR HEX FLNG, SS	100903 (x4)
Hanger	HCT-4148	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)
Hatch, with Logo	HCT-3017-2	None	None
Hatch, without Logo	HCT-3017-4	None	None
Hatch Latch	100777 (x2)	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x3)
Heater	HCS-3009 (x2)	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x2)
Heater Cover	HCT-4032	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x14)
Jetplate	HCT-4099 (x2)	None	None
Keypad	HHC-1234	None	None
Leg	HHB-3205 (x4)	None	None
Plenum	HCT-4020 (x2)	None	None
Power Cord Retainer	I5-9211 (x2)	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x2)
Shelf Tray	HCT-4050 (x2)	None	None
Support, Top Plenum	HCT-4169	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)

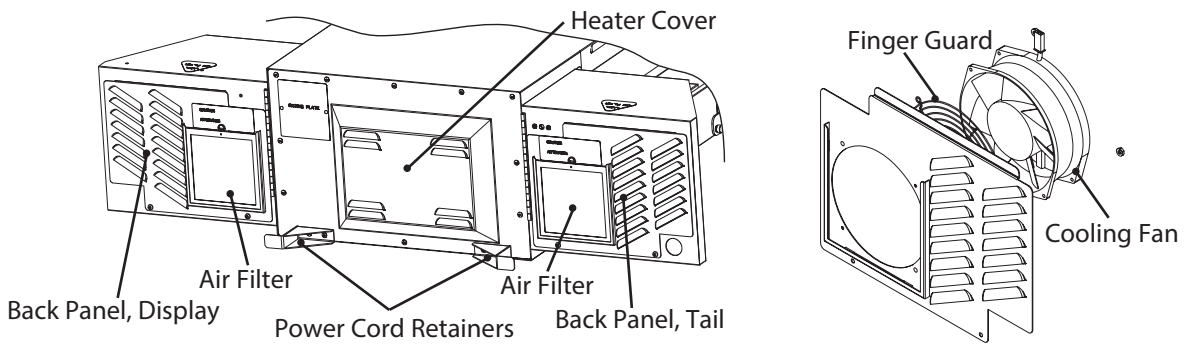

Figure B-3: Rear Oven Components

Replacing Items - Left End Bell

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

NOTE: Single belt ovens will not have a *Conveyor Motor* in this location. Instead, the *Gear Motor Cover* will be installed (see page B-4).

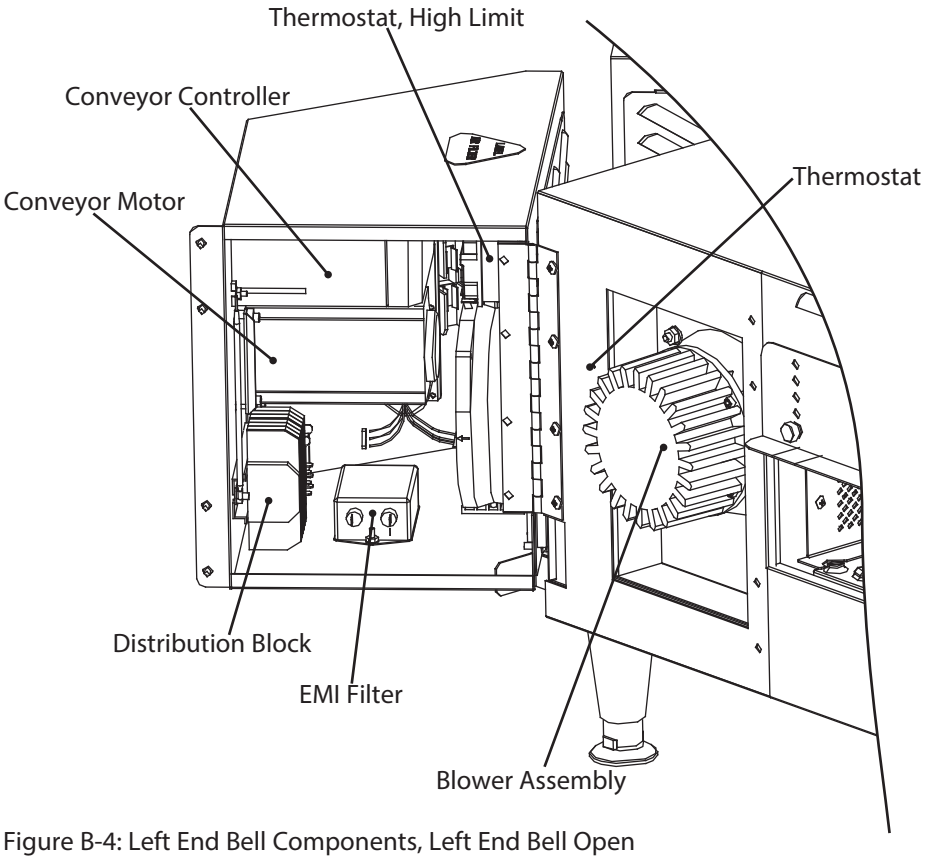

Figure B-4: Left End Bell Components, Left End Bell Open

Item	Part Number	Hardware Description	Hardware Part Number(s)
Blower Motor Assembly - North and South America*	HCT-3022	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Assembly - Europe/Asia-Pacific*	HCT-3022-2	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Controller*	CON-7013	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Conveyor Controller*	HHC-6670-2	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Conveyor Motor*	HCT-4120	Nut Plate, 1/4-20 Screw, 1/4-20 x 3/4 HEX Washer HD Serrated, CRES Sprocket, Chain 035 .5" Bore 10 T	HCT-4107 (x2) 101396 (x4) 103562
Distribution Block	HCT-4141	Nut, #10-32, SERR HEX FLNG, SS	100903 (x2)
EMI Filter*	100539	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Fuse, 20 Amp, Class CC	100599 (x2)	None	None
Fuse Block	103548	Nut, #8-32, HEX, SS	101000
Relay, Mechanical, K6	101279	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Relay, Solid State, K4/K5	HCT-4213	Screw, #8 x 3/8 PH MOD TRUSS CRES	101682 (x2)
Thermostat, Cooling Fan*	102086	Screw, #6 x 1/2, PPHD, DRL-PT, SS	101687 (x2)
Thermostat, High Limit	102075	Screw, M4X 0.7 x 8, PPHD, INT Tooth, SS	101672 (x2)
Power Cord	Contact Factory	None	None

* These items are included in both the right and left endbells.

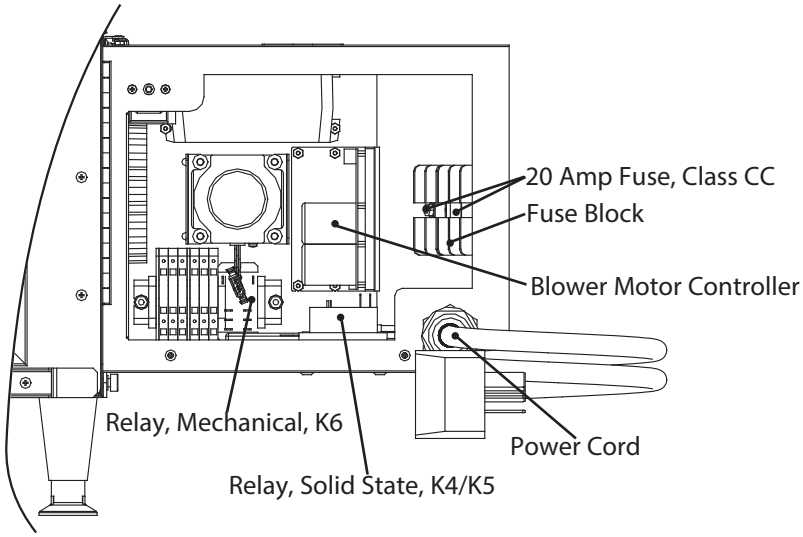

Figure B-5: Left End Bell Components, Back Panel Removed

Replacing Items - Right End Bell

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

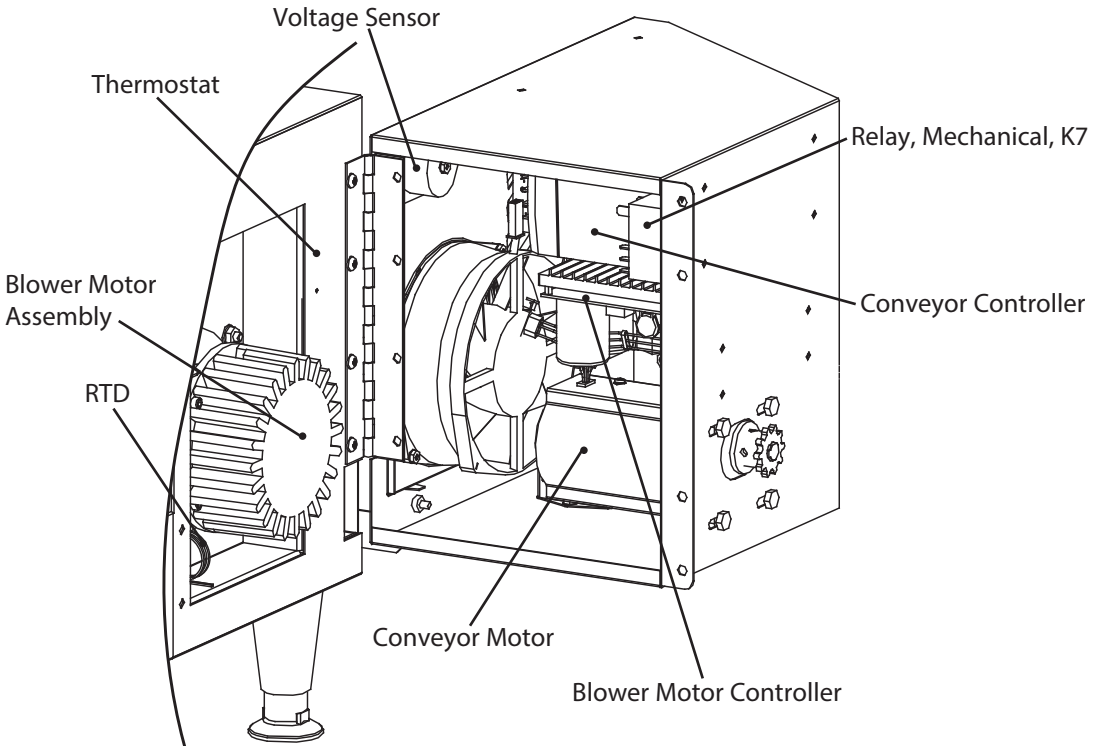

Figure B-6: Right End Bell Components, Right End Bell Open

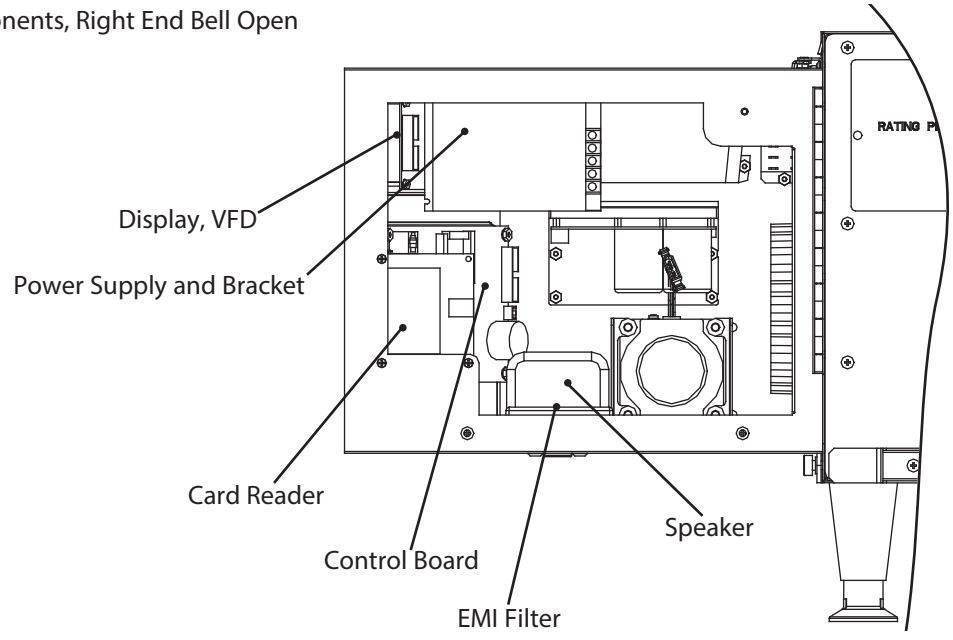

Figure B-7: Right End Bell Components, Back Panel Removed

Item	Part Number	Hardware Description	Hardware Part Number(s)
Blower Motor Assembly - North and South America*	HCT-3022	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Assembly - Europe/Asia-Pacific*	HCT-3022-2	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Controller*	CON-7013	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Cable, Display, Power, 2-Pin	C0410	None	None
Cable, Display, Ribbon	NGC-1530	None	None
Cable, Smart Card Reader	100182	None	None
Control Board	CON-3012-X**	Nut, KEPS HEX, #6-32, EXT Tooth, CRES Standoff, #6 x 1/2 long, Thru Round	102961 (x4) 101869 (x4)
Conveyor Controller*	103581	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Conveyor Motor*	HCT-4120	Nut Plate, 1/4-20 Screw, 1/4-20 x 3/4 HEX Washer HD Serrated, CRES Sprocket, Chain 035 .5" Bore 10 T	HCT-4107 (x2) 101396 (x4) 103562
Display, VFD	NGC-3023	Nut, KEPS HEX, #4-40 EXT Tooth Standoff, Round, .12 ID, .25 OD x .50 long	102960 (x4) 101954 (x4)
EMI Filter*	100539	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Power Supply	101211	Screw, M3 x 8mm long, PPHD, SS	101668 (x3)
Power Supply Bracket	HCT-4103	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Relay, Mechanical, K7	101279	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
RTD	HHC-6517-2	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101668
Smart Card Reader	100506	Nut, #6-32, Serrated Hex Flange Screw, 6-32 x .38, PFH, 100DEG, SS Standoff, #6-32 x 1/2, M/F, Hex, Zinc	100902 (x3) 101430 (x3) 101941 (x3)
Speaker	CON-3003	Clip, Speaker Mounting Screw, #8 x 3/8 PH MOD TRUSS CRES	HCT-4104 101682 (x2)
Thermostat*	102086	Screw, #6 x 1/2, PPHD, DRL-PT, SS	101687 (x2)
Voltage Sensor	100783	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961

* These items are included in both the right and left endbells.
** See Service Parts Price List for details.

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Appendix C - Replacing HhC 2620 Oven Components

Replacing Oven Components

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

Part Details...			Locate the Part Here...		
Item	Part Number	Qty. Per Oven	Outside of End Bells (Page C-4)	Left End Bell (Page C-6)	Right End Bell (Page C-8)
Air Filter	HCT-4067	2	✔		
Back Panel, Display	HCT-4079	1	✔		
Back Panel, Tail	HCT-4105	1	✔		
Blower Motor Assembly - North and South America	HCT-3022	2		✔	✔
Blower Motor Assembly - Europe/Asia-Pacific	HCT-3022-2	2		✔	✔
Blower Motor Controller	CON-7013	2		✔	✔
Cable, Display, Power, 2-Pin	C0410	1			✔
Cable, Display, Ribbon	NGC-1530	1			✔
Cable, Smart Card Reader	100182	1			✔
Chain, Conveyor	HCT-4143	2*	✔		
Chainguard, Left (Split-belt config only)	HCW-4038	1*	✔		
Chainguard, Right	HCW-4041	1	✔		
Channel	HCW-4076	1	✔		
Control Board	CON-3017-X**	1			✔
Conveyor Controller	HHC-6670-2	2*		✔	✔
Conveyor Motor	HCT-4120	2*		✔	✔
Conveyor (Single Belt)	HCW-3009	1	✔		
Conveyor (Split Belt 50/50)	HCW-3010	1	✔		
Conveyor (Split Belt 70/30)	HCW-4317	1	✔		
Cooling Fan	TC3-0433	2	✔		
Crumb Tray	HCW-4281	2	✔		
Display, VFD	NGC-3023	1			✔
Distribution Block	HCT-4141	1		✔	
EMI Filter	100539	2		✔	✔
Eyelid	HCW-4028	2	✔		
Finger Guard	100086	2	✔		
Fuse, 20 Amp, Class CC	100599	2		✔	
Fuse Block	103548	1		✔	
Gear Motor Cover (Single-belt config only)	HCT-4142	1*	✔		
Hanger	HCT-4148	1	✔		
Hatch, with Logo	HCT-3017-2	1	✔		
Hatch, without Logo	HCT-3017-4	1	✔		
Hatch Latch	100777	2	✔		
Heater	HCS-3009	2	✔		

* Quantities will differ depending on conveyor type.
** See Service Parts Price List for details.

Master list continued on page C-2.

Part Details...			Locate the Part Here...		
Item	Part Number	Qty. Per Oven	Outside of End Bells (Page C-4)	Left End Bell (Page C-6)	Right End Bell (Page C-8)
Heater Cover	HCT-4032	1	✔		
Jetplate	HCW-4099	2	✔		
Keypad	HHC-1234	1	✔		
Leg	HHB-3205	4	✔		
Plenum	HCW-4020	2	✔		
Power Cord	Contact Factory	1		✔	
Power Cord Retainer	I5-9211	2	✔		
Power Supply	101211	1			✔
Power Supply Bracket	HCT-4103	1			✔
Relay, Mechanical, K6	101279	1		✔	
Relay, Mechanical, K7	101279	1			✔
Relay, Solid State, K4/K5	HCT-4213	1		✔	
RTD	HHC-6517-2	1			✔
Shelf Tray (Crumb Tray Extension)	HCW-4050	2	✔		
Smart Card Reader	100506	1			✔
Speaker	CON-3003	1			✔
Support, Top Plenum	HCT-4169	1	✔		
Thermostat, Cooling Fan	102086	2		✔	✔
Thermostat, High Limit	102075	1		✔	
Voltage Sensor	100783	1			✔
Wire Harness, EMI to Fan Control, Conveyor Control	HCT-4086-7	1			
Wire Harness, EMI to Fan Control, Power Supply, Conveyor Control	HCT-4086-5	1			
Wire Harness, Fuse Block to EMI	HCT-4086-6	1			
Wire Harness, Fuse Block to High Limit	HCT-4086-3	1			
Wire Harness, Fuse Block to SSR, 4" LG	HCT-4086-9	1			
Wire Harness, Fuse Block to SSR, 4.25" LG	HCT-4086-8	1			
Wire Harness, High Limit to Distribution Block	HCT-4086-4	1			
Wire Harness, High Voltage, Main	HCT-4086-1	1			
Wire Harness, LOV	HCT-4163-1	1			
Wire Harness, SSR to Distribution Block	HCT-4086-2	1			

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Replacing Items - Outside of End Bells

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

NOTE: Only single-belt ovens will have the *Gear Motor Cover*. Dual-belt ovens will have the *Chainguard, Left*.

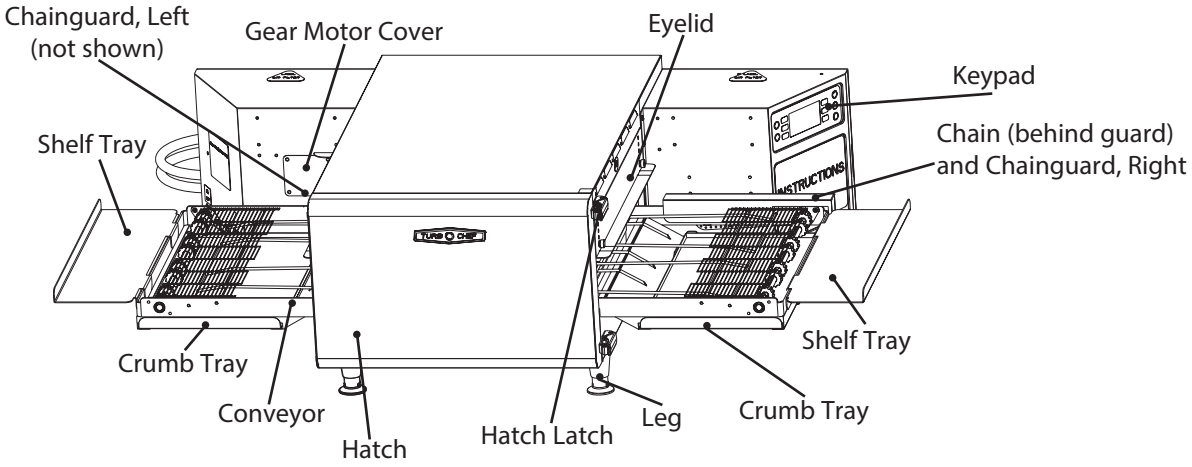

Figure C-1: Front Oven Components

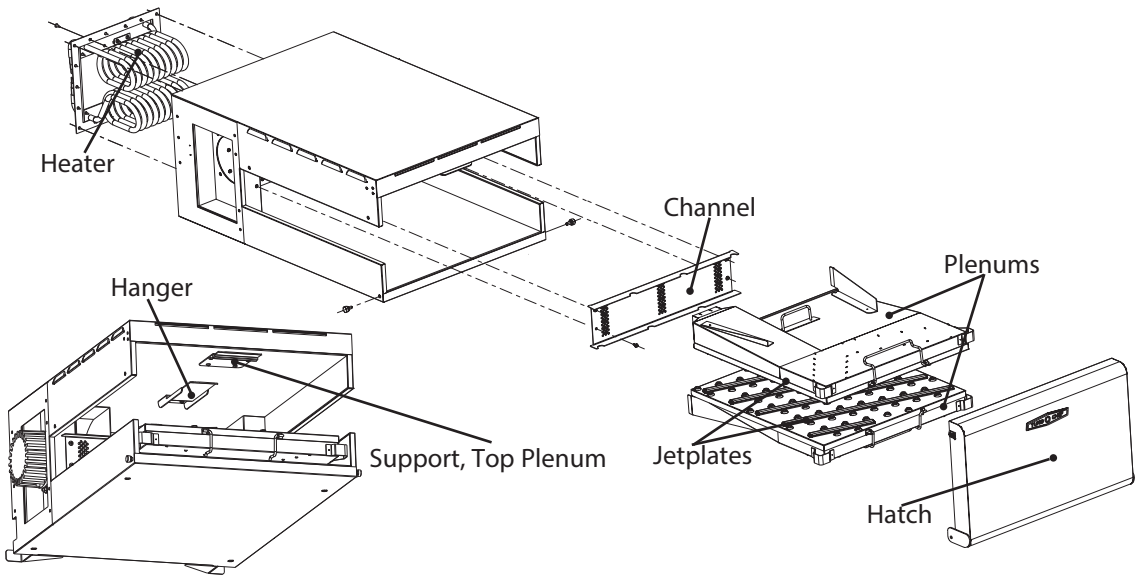

Figure C-2: Inner Oven Components

Item	Part Number	Hardware Description	Hardware Part Number(s)
Air Filter	HCT-4067 (x2)	None	None
Back Panel, Display	HCT-4079	Screw, #10-32 x .5, PPH, INT Tooth, SS	101460 (x2)
Back Panel, Tail	HCT-4105	Screw, #10-32 x .5, PPH, INT Tooth, SS	101460 (x2)
Chain, Conveyor	HCT-4143	None	None
Chainguard, Left	HCW-4038	None	None
Chainguard, Right	HCW-4041	None	None
Channel	HCW-4076	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)
Conveyor, Single	HCW-3009	Chain, #35, 52 Links, With Master Link, Endless	HCT-4143
Conveyor, Split Belt 50/50	HCW-3010	Chain, #35, 52 Links, With Master Link, Endless	HCT-4143 (x2)
Conveyor, Split Belt 70/30	HCW-4317	Chain, #35, 52 Links, With Master Link, Endless	HCT-4143 (x2)
Cooling Fan	TC3-0433 (x2)	Nut, KEPS Hex, #6-32, EXT Tooth, CRES Screw, SH MTL, #8 x 1/2 Serrated PHTRH	102961 (x4) 101688 (x4)
Crumb Tray	HCW-4281 (x2)	None	None
Eyelid	HCW-4028 (x2)	Screw, Thumb w/W HD, #1/4-20x1/2", SS	101752 (x2)
Finger Guard	100086 (x2)	None	None
Gear Motor Cover	HCT-4142	Nut, #10-32, SERR HEX FLNG, SS	100903 (x4)
Hanger	HCT-4148	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)
Hatch, with Logo	HCT-3017-2	None	None
Hatch, without Logo	HCT-3017-4	None	None
Hatch Latch	100777 (x2)	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x3)
Heater	HCS-3009 (x2)	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x2)
Heater Cover	HCT-4032	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x14)
Jetplate	HCW-4099 (x2)	None	None
Keypad	HHC-1234	None	None
Leg	HHB-3205 (x4)	None	None
Plenum	HCW-4020 (x2)	None	None
Power Cord Retainer	I5-9211 (x2)	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x2)
Shelf Tray	HCW-4050 (x2)	None	None
Support, Top Plenum	HCT-4169	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101688 (x4)

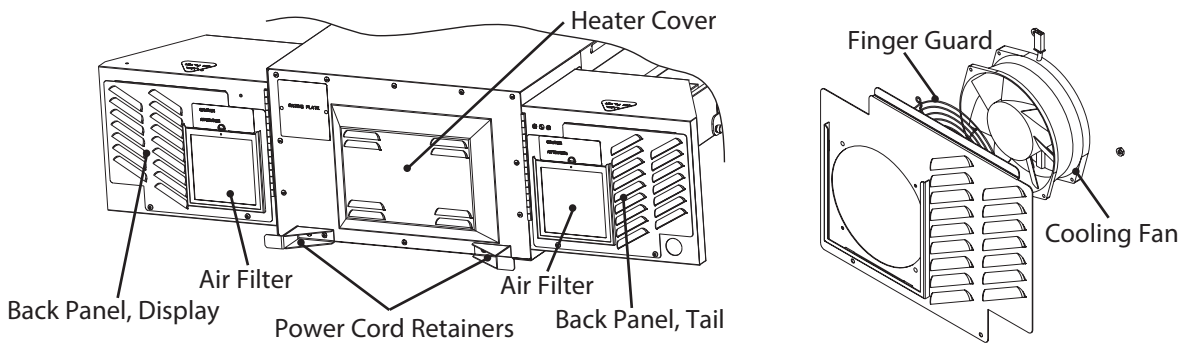

Figure C-3: Rear Oven Components

Replacing Items - Left End Bell

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

NOTE: Single belt ovens will not have a *Conveyor Motor* in this location. Instead, the *Gear Motor Cover* will be installed (see page C-4).

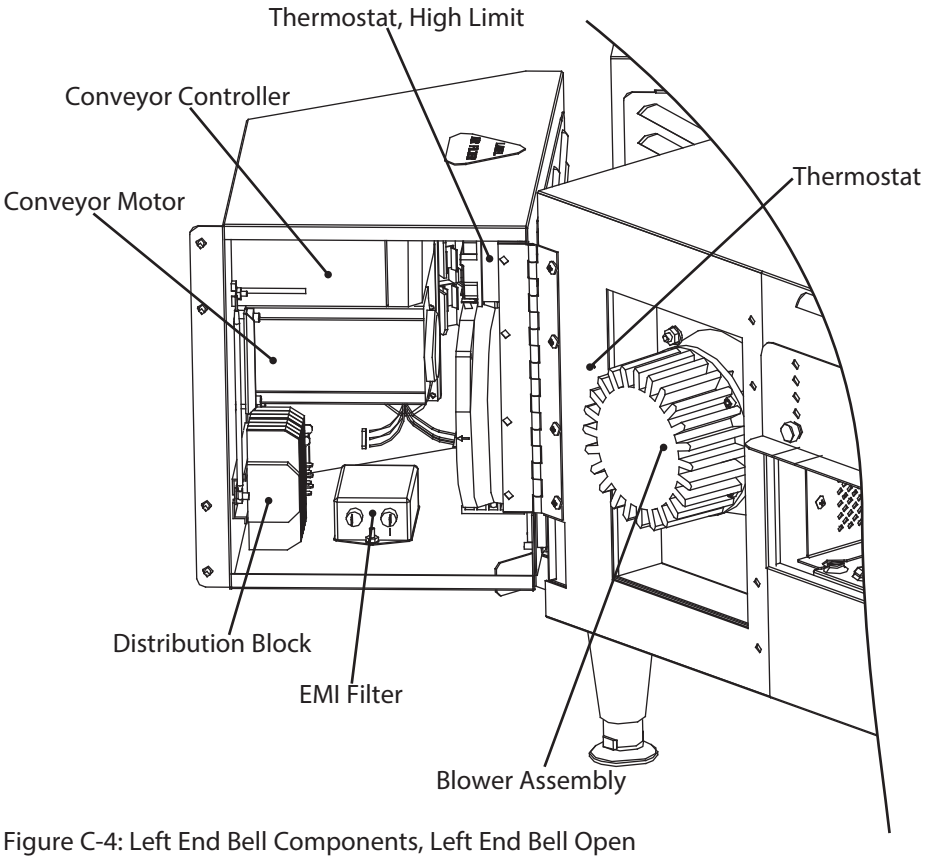

Figure C-4: Left End Bell Components, Left End Bell Open

Item	Part Number	Hardware Description	Hardware Part Number(s)
Blower Motor Assembly - North and South America*	HCT-3022	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Assembly - Europe/Asia-Pacific*	HCT-3022-2	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x I, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Controller*	CON-7013	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Conveyor Controller*	HHC-6670-2	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Conveyor Motor*	HCT-4120	Nut Plate, 1/4-20 Screw, 1/4-20 x 3/4 HEX Washer HD Serrated, CRES Sprocket, Chain 035 .5" Bore 10 T	HCT-4107 (x2) 101396 (x4) 103562
Distribution Block	HCT-4141	Nut, #10-32, SERR HEX FLNG, SS	100903 (x2)
EMI Filter*	100539	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Fuse, 20 Amp, Class CC	100599 (x2)	None	None
Fuse Block	103548	Nut, #8-32, HEX, SS	101000
Relay, Mechanical, K6	101279	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Relay, Solid State, K4/K5	HCT-4213	Screw, #8 x 3/8 PH MOD TRUSS CRES	101682 (x2)
Thermostat, Cooling Fan*	102086	Screw, #6 x 1/2, PPHD, DRL-PT, SS	101687 (x2)
Thermostat, High Limit	102075	Screw, M4X 0.7 x 8, PPHD, INT Tooth, SS	101672 (x2)
Power Cord	Contact Factory	None	None

* These items are included in both the right and left endbells.

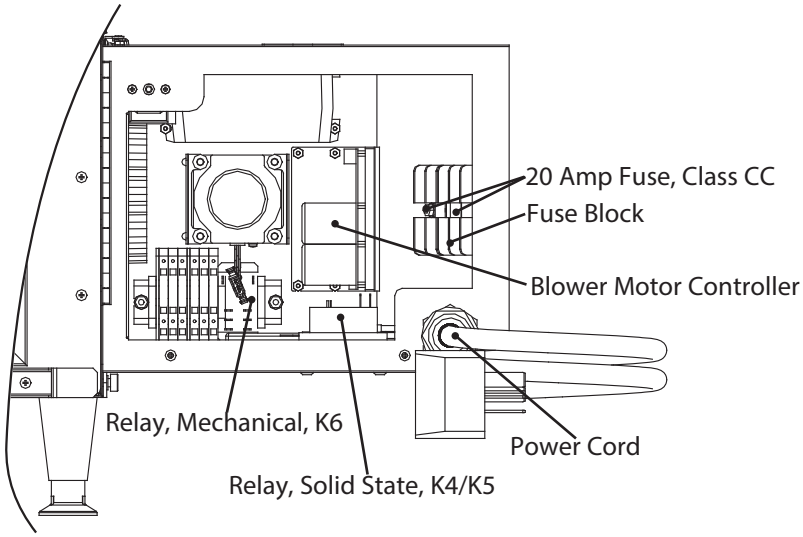

Figure C-5: Left End Bell Components, Back Panel Removed

Replacing Items - Right End Bell

⚠ WARNING: Before removing or replacing any oven component, thoroughly read the safety instructions found at the front of this manual and *Oven Systems* (pages 23-26). Adhere to all precautions and warnings outlined in these sections, as failure to do so could result in serious injury or death.

⚠ CAUTION: Before removing/installing any component, make sure it is disconnected from the wire harness (where applicable).

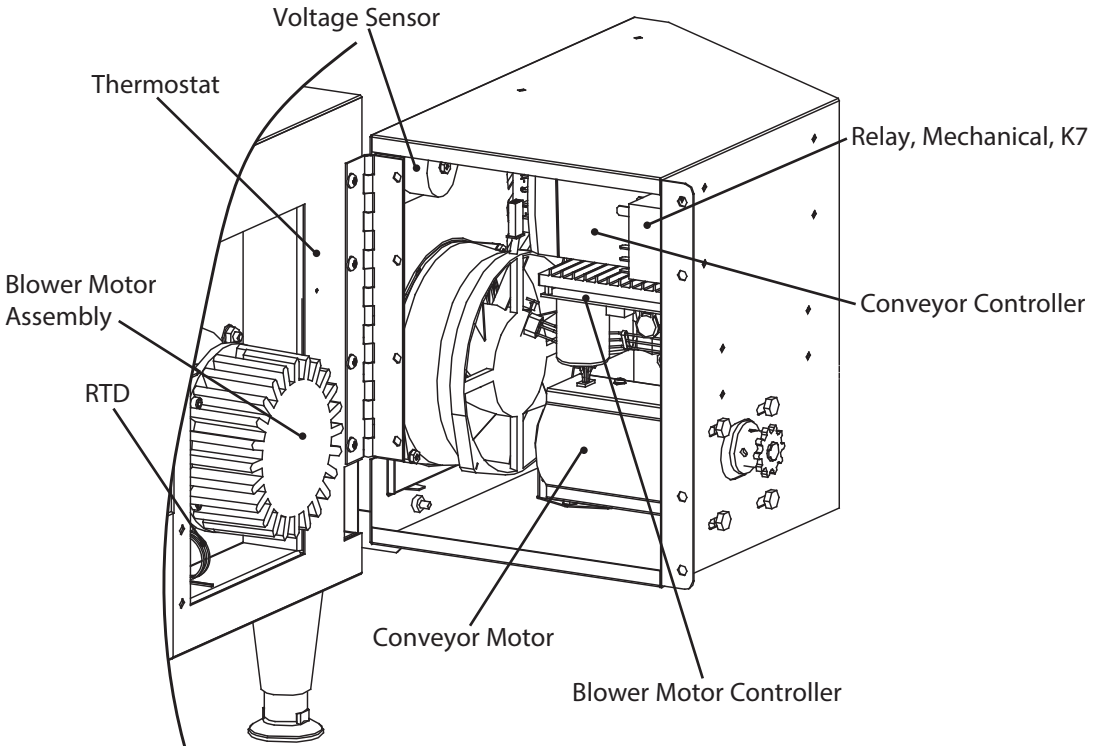

Figure C-6: Right End Bell Components, Right End Bell Open

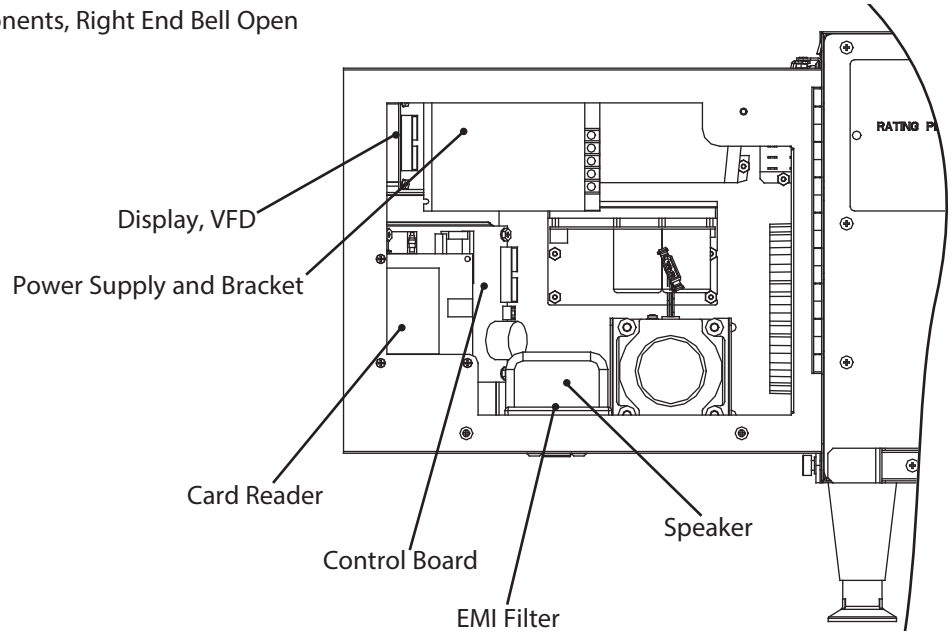

Figure C-7: Right End Bell Components, Back Panel Removed

Item	Part Number	Hardware Description	Hardware Part Number(s)
Blower Motor Assembly - North and South America*	HCT-3022	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x l, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Assembly - Europe/Asia-Pacific*	HCT-3022-2	Nut, 1/4-20, Serrated HEX Flange, Plated Steel Screw, #10-32 x 5/8, SKT HD, PLT Standoff, #10-32 x l, F/F, 3/8 HEX, PLT Spacer, #10 (.192) x 3/8 OD X 7/16, AL Screw, #10-32 x 1", PHTRHD, SS	100906 (x4) 104104 (x4) 104105 (x4) 104111 (x4) 102941 (x4)
Blower Motor Controller*	CON-7013	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Cable, Display, Power, 2-Pin	C0410	None	None
Cable, Display, Ribbon	NGC-1530	None	None
Cable, Smart Card Reader	100182	None	None
Control Board	CON-3017-X**	Nut, KEPS HEX, #6-32, EXT Tooth, CRES Standoff, #6 x 1/2 long, Thru Round	102961 (x4) 101869 (x4)
Conveyor Controller*	HHC-6670-2	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x4)
Conveyor Motor*	HCT-4120	Nut Plate, 1/4-20 Screw, 1/4-20 x 3/4 HEX Washer HD Serrated, CRES Sprocket, Chain 035 .5" Bore 10 T	HCT-4107 (x2) 101396 (x4) 103562
Display, VFD	NGC-3023	Nut, KEPS HEX, #4-40 EXT Tooth Standoff, Round, .12 ID, .25 OD x .50 long	102960 (x4) 101954 (x4)
EMI Filter*	100539	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Power Supply	101211	Screw, M3 x 8mm long, PPHD, SS	101668 (x3)
Power Supply Bracket	HCT-4103	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
Relay, Mechanical, K7	101279	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961 (x2)
RTD	HHC-6517-2	Screw, SH MTL, #8 x 1/2 Serrated PHTRH	101668
Smart Card Reader	100506	Nut, #6-32, Serrated Hex Flange Screw, 6-32 x .38, PFH, 100DEG, SS Standoff, #6-32 x 1/2, M/F, Hex, Zinc	100902 (x3) 101430 (x3) 101941 (x3)
Speaker	CON-3003	Clip, Speaker Mounting Screw, #8 x 3/8 PH MOD TRUSS CRES	HCT-4104 101682 (x2)
Thermostat*	102086	Screw, #6 x 1/2, PPHD, DRL-PT, SS	101687 (x2)
Voltage Sensor	100783	Nut, KEPS HEX, #6-32, EXT Tooth, CRES	102961

* These items are included in both the right and left endbells.
** See Service Parts Price List for details.

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For service or information:

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